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RICHARD P. ROTHWELL, C.E., M.E., ROSSITER W. RAYMOND, Ph.D., } Editors.

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Cable address: "Rothwell," New York.

Communications for Mr. RAYMOND should be addressed to ROSSITER W. RAYMOND, P.O. Box 1465, New York. Articles written by Mr. RAYMOND will be signed thus *; and only for articles so signed is he responsible.

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CONTENTS.

EDITORIALS: PAGE.
The New Pittsburg's Sulphide Ore... 257
Aspen, Colorado, the Great Camp of the West... 257
Substitutes for Magnesia in Electric Lighting... 257
Taxing New York State Corporations that Do Business Elsewhere.. 257
The Adirondack Survey... 257
The Mineral Production of the Province of Quebec... 258

CORRESPONDENCE:
Objects of the United States National Museum... 258
The Sturtevant Mill, Stamps, and Rolls... 259
Civil vs. Military Engineers... 259

North Carolina Mining Notes... 260
Making Boiler Shells and Large Tubes without Joints... 260
The Silver Veins of Butte, Montana... 261
A New Method for Laying Submarine Pipes and Tunnels... 262
Modern American Methods of Copper Smelting... 262
Ancient Quarrying in Ponapé Island.. 264
Magnesia and its Production... 264
Chinese Iron Foundries and Rice-Pan Casting... 264
Furnace, Mill, and Factory... 265
Labor and Wages... 265
Transportation Notes... 265

NOTES:
Financial Results of Russian Iron-Works... 258
Correcting the Weight of Coins by Electricity... 258
The Caspian Petroleum Wells... 260
Cost of Rail Manufacture in Germany 262
Long Distance Telephony... 263
Skrivanow Battery... 263
Metallic Gallium... 264

COAL TRADE NOTES: PAGE.
Canada... 265
China... 265
Colorado... 265
Illinois... 265
Ohio... 265
Pennsylvania... 265
West Virginia... 266
GAS AND PETROLEUM NOTES... 266

GENERAL MINING NEWS:
Alaska... 266
Arizona... 266
California... 266
Canada... 266
Colorado... 266
Dakota... 267
Georgia... 267
Idaho... 267
Mexico... 267
Michigan... 267
Minnesota... 268
Montana... 268
Nevada... 268
New Mexico... 268
North Carolina... 268
Oregon... 268
Pennsylvania... 268
Utah... 268
Wisconsin... 268

FINANCIAL:
Metals... 269
Iron Market Review... 269
Coal Trade Review... 269
New York... 269
Philadelphia... 270
Buffalo... 270
Boston... 270
Baltimore... 271
Statistics of Coal Production... 273
FREIGHTS... 273
Advertisers' Index... xii

THE New Pittsburg Company, of Leadville, has struck a large body of sulphide (galena and blende) ore, carrying from 50 to 100 ounces of silver to the ton, and which appears to be somewhat similar to that found in the Moyer shaft of the Iron Silver Mining Company. It is to be hoped that these companies will take measures to make this important ore available. The large percentage of blende in the ore has heretofore rendered even a 50-ounce ore practically valueless; but probably the galena and blende may be cheaply separated by concentration, when each will have a value. The importance of the subject is sufficient to justify systematic experiments. Facilities are now available in the camp for doing this.

ASPEN, Colorado, is the great camp of the West to-day, and is not only attracting great attention, but is creating almost an old-time boom. A few of its mines, the Aspen, Vallejo, Spar Consolidation, Emma, and J. C. Johnson, have produced in the first fourteen months nearly two million ounces of silver from an ore that has averaged about 100 ounces, and occasionally runs up in quantity to a thousand ounces.

During the months of January and February of this year, the output of the camp has been about 800,000 ounces of silver. These figures are sufficiently startling to attract attention. The ores occur as a contact deposit between dolomite for a foot-wall and blue lime for a hanging-wall. The porphyry overlies the lime. The vein or deposit is irregular, but on an average very thick, and the ore is a mixture of about — per cent of lead, 6 to 10 per cent zinc, in a gangue of heavy-spar, quartz, and calc-spar.

We shall revert to this interesting subject and give some notes concerning the highly successful smelting of these difficult ores.

THE great promise of usefulness and profit given by the FAHNEHJELM incandescent light, already noticed in these columns, makes it natural that investigation should be in the direction of securing some other material than magnesia and some other form of lamp (applying this term to the combs) than those used in the present system. It is not improbable that substitutes may be found for these; but it is highly improbable that they will be found among the few known substances capable of resisting the high flame temperature (theoretically 5400 degrees Fahr.) of water-gas; for it is unlikely that any of these have escaped the careful experiments of the patient plodders who have brought out the present light.

The announcement of a discovery of such a refractory material would be interesting; but when the announcement refers to it as a *secret* composition that is *indestructible* under the action of a water-gas flame, we are simply incredulous, and are reminded of the KEELY *motor* humbug, which has flourished in the same atmosphere.

The *secret* composition with which parties in Philadelphia are showing an incandescent water-gas light, is, we are informed, nothing more or less than platinum. It is almost needless to tell our readers that this metal has been experimented with in all possible forms during more than forty years past, and always abandoned as impracticable, for the reason that its excessive cost and rapid deterioration by molecular change under the action of high temperatures, necessitating frequent renewal, render it too expensive to be practicable for general use.

THE tax law of New York State, under which it has been attempted to tax corporations organized here upon their business conducted in other States, or even in foreign countries, has been the cause of much complaint, so manifestly unjust is it. A bill has recently been introduced in the Legislature that provides that upon all foreign and domestic corporations whose capital is only partially employed within this State, the basis for tax shall be the capital actually employed within this State. In order that the State may be sure of its rights in ascertaining the just proportion of capital subject to such tax, ample powers are given to the controller both to examine all books and records and to compel attendance before him by the officers of any company to testify the full truth. Furthermore, inasmuch as this proposed bill places the law upon a basis of undoubted justice, a new and swift means of enforcing collection by warrant is provided—without, however, yielding any right, by suit or otherwise, that now exists. A retroactive clause is inserted, but only of a permissive character, and limited in its duration to August 1st of this year. Under its provisions, back taxes, not in judgment or not involved in trial in actions already begun, can be paid before that day upon the new basis. The bill is drawn by and has the approval of the attorney-general.

The present law is so oppressive on mining and other companies doing business in other States, where they have to pay taxes, that not a few have reorganized in other States or have moved their offices to other States. The proposed bill, as reported above, is just and reasonable, and will not be objected to by the mining and metallurgical companies.

THE Adirondack Survey, about which so much senseless and malicious nonsense has been published in some of the daily papers, has been investigated by a special committee appointed for that purpose. The report of this committee has been presented, and it states that about one half the area of the Adirondack wilderness had been accurately surveyed by Superintendent COLVIN, of the Adirondack Survey, and full and reliable data for the same were on file in his office. The committee, he said, deemed it important that these data should be immediately put in the form of maps, and in connection with the report he presented a bill providing for the appointment of an advisory commission for the Adirondack and State land surveys. The governor is to appoint three technical experts, two of whom shall have had extended experience in geodetic and topographical surveys and be familiar with the methods and results of such surveys, and shall advise the commissioners in reference to the completion of the surveys at the earliest practicable time. They are to serve without compensation, but are to be allowed necessary trav-

eling expenses. The bill was referred to the Committee on Ways and Means.

As to the State Survey, the report says it is practically absolutely correct, minute and thorough, and is justly in the front rank of trigonometrical surveys. The Adirondack Survey has been conducted with all the scientific accuracy desirable, and the results will bear comparison with the work executed under similar conditions by the United States government.

Those who know the painstaking industry and devotion which Supt. VERPLANCK COLVIN has shown in the Survey of the Adirondack forests and in directing attention to the importance of their preservation to the water-ways of the State, will rejoice at this authoritative refutation of the malicious charges brought against him.

It would certainly promote the efficiency and economy of the work of mapping the State to have all the surveys conducted under a single direction, and the results discussed and elaborated by one head and competent officer.

WE are indebted to the courtesy of M. J. OBALSKI, Mining Engineer of the Province of Quebec, for a copy of the Crown Lands report of that province for 1883.

Quebec is supposed to contain many minerals of value; but whether this supposition be incorrect, or whether the failure to make them available is due to the character of its inhabitants, we do not pretend to decide. The fact is on record that this, almost the first settled portion of the continent, and known to possess minerals in considerable quantity at least, had a total mineral production of only $516,837 in 1883.

No full statement of the items comprising this output is given; but we glean from the reports the following items:

Copper ore to Great Britain, 236 tons, value	$10,890
" " United States, 4166 tons, value	139,583
Phosphate to Great Britain, 12,263 tons, value	255,816
" Germany, 1995 tons, value	44,500
Asbestos, about 1300 tons, value about	100,000
Gold, mica, iron ore, and other minerals, amount not stated.	

The Beauce gold region has not thus far realized the brilliant predictions made for it. A few companies and individuals have worked them under the liberal regulations of the Canada Gold Company and of the province, under which "any person or company wishing to engage in mining has only to take a lease from the Canada Gold Company, undertake to work it in good faith, and to pay over to the company three per cent of the value of the gold collected. In case of the proprietor of the soil being unwilling to dispose of the land required, he can be forced to do so upon the value of the land being fixed by arbitration, without regard to what may lie below it. Outside of the Seigniory of Rigaud Vaudreuil, the same rights may be with equal facility acquired from the government, either by a direct and definite purchase of land at two dollars an acre, or by paying the mining inspector a monthly license fee of two dollars for each man working upon public (ungranted) lands, or one dollar per man when the lands worked upon are granted with reserve of mines and minerals."

The results of the work of the Canada Gold Company have not proved very satisfactory. No production statistics are given. The copper mines worked are not even mentioned, beyond the fact of their production; but it is well known that the principal mines are situated at Capelton, and are worked one by the Oxford Nickel and Copper Company, and the other by Messrs. Nichols & Co., both of this city. The ore also comes here, and is said to carry from 3 to 4 per cent of copper, and from 40 to 45 per cent of sulphur.

On the whole, there does not appear to be much encouragment for the investment of capital in mining in a country whose capitalists have so little confidence in its value that, after all these years, they have done practically nothing in the way of mineral production.

Financial Results of Russian Iron-Works.—Our iron-masters should feel comparatively happy; it is always more or less satisfactory to know that things might be worse than they are. A report has just been issued by the Russian committee appointed to investigate the working of the operations carried on by the mining department for the production of pig-iron, bar-iron, small arms, guns, etc., in the Ural. The report extends over ten years, from 1873 to 1883, and shows that, giving the works credit for every thing produced, there has been a loss of 12 million roubles in the ten years. The larger loss occurred from 1873 to 1876, the loss from 1879 to 1882 being about 400,000 s. r. per annum.

Correcting the Weight of Coins by Electricity.—Herr J. Muller, a German mining engineer, has introduced the practice of bringing light coins of silver and gold to the standard weight by electro-deposition of the metal on their surfaces. The coins form the cathode of the electro-typing bath, and a band of silver or gold, as the case may be, is used as the anode. For silver coins, the solution that is decomposed by the electric current consists of fifteen grams of chloride of silver freshly precipitated in a saturated solution of cyanide of potassium, to which water has been added to make one liter of solution. Two Leclanché cells form the source of the current. As 101 milligrams of silver are found to be deposited in an hour by this arrangement, the coins are exposed in the bath for a length of time sufficient to supply the silver that they lack. For slight deficiencies, there is no defacement of the inscription. (*See* the ENGINEERING AND MINING JOURNAL for November 8th, 1884, page 314.)

CORRESPONDENCE.

[Communications will be noticed only when accompanied with the full name and address of the writer. Unless specially desired, only initials will be printed. We invite criticism and comment by the readers of the ENGINEERING AND MINING JOURNAL. Replies not intended for publication should be addressed to the Editor of the ENGINEERING AND MINING JOURNAL in blank, stamped, and sealed envelopes. We do not hold ourselves responsible for the opinions of our correspondents.]

Objects of the United States National Museum.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I inclose a little pamphlet describing in part the collections exhibited by this department at the New Orleans Exhibition. One or two of the collections mentioned, however, have not been exhibited at New Orleans on account of non-arrival.

A recent editorial in your JOURNAL on the subject of a text-book of metallurgy, and the one in the issue of March 28th announcing the series of articles by Dr. Peters, prompt me to call your attention to the work of this department of the National Museum.

The department was formally organized on December 1st, 1882, although I had spent a few months previous to that time in looking over the collections that were to form its basis. For eighteen months after its organization, my time was fully taken up in cataloguing and arranging the vast amount of ore material already in the museum. This material was for the most part the collections exhibited at the Centennial Exhibition by the various States and territories.

The basis of its original arrangement was a geographical one, and it is thought best to continue this arrangement in the museum. The labor of getting this collection into shape was very great, as it consisted of about 30,000 specimens, by far the larger portion of which had not been unpacked since the close of the Centennial. It is now, without doubt, the finest collection representing the mineral resources of this country, and as soon as proper labels can be prepared and printed, its value will be greatly enhanced.

The metallurgical specimens donated to the museum at the close of the Centennial had suffered considerably, on account of the unavoidable delay in obtaining the new building for museum purposes. Besides this, many of them were of a showy, highly wrought character, representing what can be, rather than what is, accomplished in the regular course of manipulations.

Having got the material somewhat under control, the necessity for making collections to represent the department at New Orleans afforded the much desired opportunity for making some systematic collections in metallurgy, to show what such a department should be. Manifestly, in the short space of time, and with the small amount of money allowed, it was not possible to cover the subject completely; but I have made it a cardinal point that the collections should be full and complete, rather than numerous. The greatest stress possible has been laid upon the necessity of having full, complete, and accurate information in regard to each collection. This has been the most serious difficulty met with in the whole subject, as many firms and practicing metallurgists object most strongly to giving any information whatever in regard to their works or processes.

Of course, the museum looks at the subject from a purely impersonal, non-commercial, and highly scientific stand-point, and there is not the slightest desire to interfere in any way with the business side of the question, or to pry into what many consider valuable "trade secrets." There are many cases in which it is not easy to draw the line between the purely scientific and the business portion of a process, and in many instances the difficulties are enhanced by the narrow-mindedness of parties in charge. For instance, I may ask, for the sake of scientific information, how much work a given man will accomplish in a day, but I may not ask how much he is paid for a day's labor.

The collections made last summer include many not mentioned in this description, while a few subjects are far more fully illustrated than would appear, this being especially so in regard to copper. It is the design of the department to make full and complete studies of these collections, including many analyses, and it is hoped that these, together with the large number of drawings and illustrations accompanying them, will add largely to the scientific knowledge of American metallurgy. It is hoped also to add to the collections, from time to time, others of the same nature, so as eventually to build up a grand illustration of the metallurgy of this country.

As to the preparation of a text-book on the science of metallurgy, my investigations of the literature of the subject have led me to the conclusion that there is not at present accessible a sufficient body of scientific facts upon which to found such a treatise. In saying this, I make a distinction between the scientific and business view of the question. I have always held that the latter can only be learned by bitter personal experience, and my recent collecting has very much strengthened this view.

Notwithstanding all that has been written on the subject of metallurgy, and the great good that has been wrought by the Institute of Mining Engineers, it is very surprising how little is really known of the most ordinary metallurgical operations, and this is especially so in regard to the chemistry of the operations. With the exception of the Bessemer process, there is not one subject fully and completely worked up and described.

While the Transactions of the Institute are full of valuable and interesting communications, the greater number of them describe either experiments or extraordinary rather than the usual proceedings. Now, while these are of great value to the trained metallurgist, who can discriminate and extract the really valuable portions, yet to the beginner, or to one wishing to get a clear idea of the principles of metallurgy, they are very embarrassing and misleading.

In order to furnish the necessary data for a treatise on the science of metallurgy, it is obligatory that we should have a great many more full and complete descriptions of the ordinary course of the most common operations, together with the necessary chemical examinations, to show the changes the material undergoes from the beginning to the end. Work of this character would not generally, and in many cases could not, be undertaken by the practicing metallurgist, as it involves a large amount of labor for which there is no adequate prospect of a suitable return, save in "glory."

It is the design of this department, in connection with its regular duty of the exhibition of specimens, to supply, as far as possible, the deficiency in this character of information; and when a sufficient amount has accumulated, it is hoped a suitable treatise on the science of metallurgy can be prepared.

I am at present engaged upon a very interesting investigation of the refining of copper. I have a series of nine specimens, taken from the bath during the course of the refining process, and I am sure that the analyses of these nine specimens will furnish a great deal of valuable and interesting information as to the changes that the material undergoes. There are many other subjects of equal interest to be investigated as soon as time will permit. Yours very truly, FREDERICK P. DRURY,
Curator Metallurgy.

The Sturtevant Mill, Stamps, and Rolls.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Mr. Heard, in his last week's letter, seems to entirely misunderstand the ground I took in criticising his conclusions from experiments with the Sturtevant mill. If he will read my letter again, he will find no basis for his statement that I object to figures; my whole argument was based on his figures and a few others that I supplied. My statement that, "taken alone, his figures prove nothing," was certainly sufficiently explained by the conclusion of the sentence; and the idea I wished to convey was that, for a comparison, figures on both sides must be given or understood.

As far as I can make out, Mr. Heard seems to have had, in his second letter, only the question of coarse crushing and concentration, and his remarks about European processes are entirely out of the field of my criticism. His original article was on an American machine in an American paper, and his observations I naturally read in reference to American practice. In my letter, I said nothing at all of coarse crushing for concentration, but confined myself entirely to the question of fine crushing by rolls and stamps in American working, for ores to be roasted, leached, free milled, or finely crushed for certain gold concentration. If I have been misunderstood by Mr. Heard, he will now see that my letter has no reference to European practice nor to coarse concentration. My whole argument was that, for such work (in this country), stamps have heretofore been almost universally used; that stamps make more "fines" than Mr. Heard charged the Sturtevant mill with; and therefore, his conclusion that the Sturtevant mill made too much "fines" to be used for this work was not justified. The very fact of my taking a pulp of 30-mesh as a standard of comparison showed the limits of my arguments.

Mr. Heard quotes me as saying, "The Sturtevant mill is vastly superior to stamps." This is a little twisting of my statement, which referred simply to the figures given; and in another part of my letter, I distinctly limited my criticisms to these figures "so far as they go;" and again, at another point, referred to variations obtainable in proportions of fines by running of machine and variety of ores.

The objection of Mr. Heard to my calculation of the percentage of fines by eliminating all grains above 30-mesh is fair on theoretical grounds. It is of no weight against my argument; because, if we assume every particle of this coarse material to be made finer than 140-mesh if reground so as to pass 30, it would still leave less fines in the Sturtevant mill product than we find in stamp pulp successfully treated by the processes against which Mr. Heard bars the Sturtevant.

Mr. Heard misquotes me utterly in his third paragraph. He makes me say: "Practically, all gold and silver ores have been crushed by stamps." My statement was as follows: "Practically, all the ores roasted for amalgamation or leaching, all free-milling silver and gold ores, and gold ores requiring concentration, have hitherto been crushed by stamps." This was intended to refer to American practice, and will be denied by no practical man. Rolls have *of late* been most successfully used in place of dry stamps, and will doubtless be used more in the future; but this has no bearing on the general fact quoted as to the past use of stamps, and the consequent possible use of Sturtevant mill for the same work, "so far as these figures go."

The objection No. 5 to a comparison of Sturtevant mill pulp through a 10-mesh with stamp pulp through a 30 is, I think, met by allowing, as I have above, that if all above 30-mesh were returned to mill and then passed 140-mesh, it would not turned the scale in favor of stamps. I do not, however, rest on any mere hypothesis, as I have had occasion to crush a number of different ores through a 30-mesh in the Sturtevant mill, returning all coarser than that size continuously, and the resulting pulp has in no case contained the maximum percentage of fines found in stamp pulps successfully worked.

My remarks on rolls can not be interpreted as meaning that they produce as much fines as stamps. I quoted a single instance of a pulp crushed in rolls showing a very high percentage of fines to illustrate the previous statement, that opinions on this subject were general only, not based on universally accepted figures. To prevent, however, any misunderstanding, I will here state that, in my experience, rolls will make less fines than the Sturtevant mill, and the latter less than dry stamps, all crushing in the same mesh; and with the reservation that the capabilities of the Sturtevant mill under varying conditions of speed and screen opening are not yet fully determined.

Mr. Heard's suggestion of a microscopic examination of the pulps is a good one. I have examined three samples of pulp below 30-mesh: No. 1, from dry stamps; No. 2, from Sturtevant mill; No. 3, from rolls. Each sample was sized into grains caught on 60, 80, 120, and 150 mesh and below. A small quantity each of Nos. 1, 2, and 3 of corresponding sizes were placed on a glass slide and viewed in succession. The pulp No. 1 was most regular in size, and nearly all particles rounded or with rounded edges. No. 3, from rolls, was nearly wholly angular, and consequently showed much greater variations in sizes of particles caught on each screen. No. 2 was intermediate, being partly angular, partly rounded. These distinctions ruled down to 150-mesh; below this, it is difficult to determine accurately, as the dust forms a spongy mass. So far as this goes, the peculiarities of form shown seem to bear out my idea of the relative work of the three machines. On this and other questions of product from the three systems of crushing, I hope to have shortly more detailed information from a greater variety of ores. D.

Civil vs. Military Engineers.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I do not think that in omitting passages from my last letter, without consulting me, you improved the letter. But I confess that I can not afford to find fault with you, lest you cut me off entirely, before I have "said my say." I will therefore protest but meekly, and beg your readers to believe that the passages thus arbitrarily suppressed were really of remarkable power, and to lament with me that they are now lost to the world forever. But I have newer matter in hand.

In his first letter, "C. U. E." asserted three principal things, namely:

1. Military engineers have been guilty of "encroachment." They have assumed control of "fields that legitimately belong only to the civil engineer."

2. The education of the West Point graduate is "exceedingly deficient both in quantity and quality, and much inferior, for the purposes in question, to what is furnished, for similar purposes, by universities and colleges to civil graduates."

3. "A young man leaving West Point with honors is entirely unfit to be placed with authority in charge of construction." Nevertheless, he "is placed at once over a retinue of subordinates," to the great loss of the government.

How does the debate now stand as to these three propositions? I have denied all three, but I have so completely annihilated the third, that nobody has dared to reiterate it. "C. D. M.," it is true, feebly inquires where the young graduates are; and I have answered him, I trust to his satisfaction. But one thing is certain: Wherever they are, they are not where "C. U. E." pretended. *That* assertion is nailed.

Now as to story Number One, it is practically as dead as Number Three, but its parent is not so well aware of the fact. In his last letter, "C. U. E." renews the charge, asserting that (*a*) "about one hundred engineer officers (*b*) of all grades control to-day the millions of money spent each year in our rivers, harbors, light-house establishment, (*c*) survey of the great lakes, (*d*) geographical explorations, (*e*) weather signal service, and many odd jobs like (*f*) the Alaskan surveys, etc."

I have sprinkled the above sentence with italic letters, and every one of them has hit an error of fact. Thus:

a. There are about thirty-five instead of a hundred engineer officers who control the expenditure of money on public works.

b. They are not of all grades. None of the second or first lieutenants and not all of the captains of the corps are among them.

c. There are no engineer officers employed on the survey of the great lakes.

d. There are no engineer officers employed in geographical explorations.

e. There are no engineer officers employed in the weather signal service.

f. There are no engineer officers employed in Alaskan surveys.

"C. U. E." has been "thirteen years in charge of a technical school." Is that the kind of accuracy to which he has trained his pupils? Contemplated together with his appalling recklessness in the use of quotation-marks, the above exhibition fairly takes the breath.

But he begs (*g*) that I will also "inquire into the struggle of the military officers to assume control of the Coast and Goedetic Survey Office, which for a long time has been, and even at this writing is (*h*) in danger of military voracity."

g. The zeal with which all these critics beg *me* to "inquire" is misplaced. I inquired before I began to assert and characterize and claim and denounce. If they had made as timely and thorough inquiry, they would have kept out of this controversy altogether.

h. Being pretty well acquainted with the history of the Coast Survey, I know that it was organized and managed from 1843 to 1867 by A. D. Bache, a West Point engineer, assisted in the highest scientific and adminjstrative portions of his work by the following, among other graduates of West Point: Joseph E. Johnston, T. J. Lee, A. A. Humphreys (afterward Chief of Engineers), J. G. Foster, I. I. Stevens, and W. P. Trowbridge (now a professor at Columbia College). I know that the law at the beginning, and ever since, and to-day, has required that "officers of the army and navy shall, as far as practicable, be employed in the work of surveying the coast of the United States." (See for these precise words section 4687 of the Revised Statutes.) I know that there is not a single army officer now connected with the work, and that the history of the transformation of the temporary survey of the coasts, originally provided for, into a vast and permanent continental work has been, step by step, a history of quiet encroachment on the part of civilians. Since Æsop heard the wolf scolding down-stream at the lamb, there has been nothing to match the pretense that the Coast "*and Geodetic*" survey, after swallowing the continent, is in danger from military voracity. As to the record of that institution, I will not be tempted into a discussion at present. If I do hereafter take it up, I shall not be satisfied with the platitudes of "C. U. E." as proof of the real efficiency of the organization, and the accuracy and usefulness of its work.

THE WEST POINT TEXT-BOOKS.

I now come to story Number Three, which concerns the course at West Point. I have already exposed the ignorance of "C. U. E." on this subject; but I think it may be worth while to illuminate the exposure still further. For instance, his noble scorn is roused to find that Bartlett's *Mechanics*, "under the obsolete heading of 'Natural Philosophy,'" is a text-book at West Point. As to the "obsolete heading" in the *Register*, "C. U. E." is respectfully informed that, having been prescribed by statute (framed by civilians), it is not possible for army engineers to change it; and that, moreover, as it happens to be the title employed by one of the most recent and profound English authorities in physics, it is not so obsolete, after all, as the objection to it. As to Professor Bartlett's book, it is certainly not food for babes. I forbear to discuss the question, whether some other text-book might not be better calculated to develop the faculties of average students. But *once mastered*, it enables a man to understand and handle with ease all the rest of the literature of the subject. And the best men of each class at West Point, the men who, and who only, win entrance into the Corps of Engineers, do master Bartlett's *Mechanics;* and many of our most distinguished engineer officers continue all their lives to use the formulas and methods of that

book, making their own transformations, and not trusting to the abridged work of others.

But "C. U. E." finds that West Point is "still more backward in subsidiary studies." Fownes's *Chemistry*, in fact, is actually retained in the class-room there, although at Johns Hopkins, Harvard, Cornell, or Yale, Fownes's *Chemistry* would be looked upon as "an interesting evolution of alchemy." All chemistry, I suppose, could be thus looked upon. The text-book of Fownes has gone through thirteen editions, the last of which, appearing in 1884, had been, like its predecessors, fully revised and brought up to date. The work was done by the late Henry Watts, translator of Gmelin, author of the great *Dictionary of Chemistry*, editor of Graham's *Chemistry*, one of the three authors of an elaborate *Chemical Technology*, Librarian of the Chemical Society, and for about thirty years editor of its *Journal*—in a word, probably the best qualified person in the world to do what the *Chemical News* of December 5th, 1884, says Watts did with Fownes's "well-known *Manual of Chemistry*, which he almost entirely rewrote, and made into virtually a new work." If "C. U. E." does not know this, he must be ignorant not of the last edition of Fownes, but of several preceding editions, which were thus reconstructed by this famous editor. Fortunately, other instructors in technical schools are not so far behind the age. At Lehigh University, for instance, Professor Chandler uses this excellent modern manual, and does not hesitate to pronounce it the best of its class; at Princeton, it is the text-book in the senior year; and at the School of Mines of Columbia College, in the second year. It is to be hoped that chemistry is not the branch which "C. U. E." has been professing for thirteen years past.

But he declares that West Point has used for a long series of years text-books upon a wide range of subjects, "all written by a single author, and now far behind the times." This is an allusion to the mathematical text-books of the late Professor Davies. The exact degree of its accuracy may be inferred from the fact that not a single one of Davies's old books is in use at West Point. Professor Van Amringe, of Columbia, thoroughly revised and augmented the *Legendre* in 1882, and the *Surveying* in 1883, while the *Algebra* was rewritten by Professor Church in 1877. Trigonometry, the calculus, and analytical and descriptive geometry are now taught at West Point (so far as text-books are used at all in teaching them) from books not to be found, as yet, elsewhere; because they are the product of ceaseless revision and interpolation. In a sense, this is true of the text-books in all departments. West Point possesses an institution which does not, so far as I know, exist at any other American technical school—a printing-press, which is kept constantly at work upon additions and corrections, for insertion in the text-books in use. All such books are freely modified in this way; and nobody can pronounce a correct judgment as to the manuals employed who has not examined the interleaved and reconstructed copies used by the cadets and their instructors.

The text-book on Civil Engineering now used at the Academy is new, having been prepared by Professor Wheeler, who lately occupied the chair of engineering. Whether it is going to give satisfaction, can not be determined in advance of a thorough trial. One thing is certain: if it is not found suitable, any demonstrably better book will be substituted for it with much less difficulty than attends the change of text-books elsewhere.

I ought to add here, that the consulting library and the illustrative apparatus at West Point are as good as abundant means, intelligently applied, could make them. Appropriations have been liberal, and the money has been expended, on the whole, with wisdom. The professors of the Academy are constantly traveling about to see what other schools possess; and if any one of them has observed elsewhere some coveted aid to instruction, he has not been prevented by the poverty of the school or the obstinacy of the trustees from acquiring it.

THE BLOSSOM ROCK BUSINESS.

Very little now remains of C. U. E.'s attack upon the West Point course. But I have a good deal more to say upon this head. I must, however, pause here in order to notice, before closing, a new champion, "Observer," who makes his *début* in a manner which one specimen must suffice to exhibit. He says, "Von Schmidt had blown up Blossom Rock after a series of futile dalliances with surface-charges by the army engineers in charge.'

The whole history of the Blossom Rock businesss is in my hands at this moment; and part of it I remember personally. "Observer" will (or ought to) be surprised to know that the army engineers (Lieutenant Heuer) made definite experiments, not "futile dalliances," on the rock in 1867, from which they concluded that drilling should be employed instead of surface-charges, and so recommended, estimating the cost at some $56,000; that in 1868, an appropriation having been made, Lieut.-Col. B. S. Alexander, one of the most gifted engineers ever born in this country, submitted a project for chambering and blowing up the rock, the estimated cost being about $41,000 in coin; that, more than a month later, A. W. von Schmidt offered to do the work by contract for $75,000 currency, on a plan which was an improvement in detail of the main idea of Alexander; that the army engineers, being required by law to do work by contract whenever possible, of course were glad to accept the courageous offer of this eminent civilian contractor. The whole history of their association with him in the prosecution of the work, and the cordial recognition of his merit contained in the report of Major Williamson to the Chief of Engineers, are creditable to both parties. "Observer's" attempt to state the matter in another light is a piece of feeble and foolish malice.

So, likewise, is his insinuation about General Newton's career. I can not help despising the holy horror with which these antagonists of mine regard my "personalities" and "incivilities," while they deal in nods and winks and they-could-an-they-woulds. "Observer" evidently refers to the unfortunate connection of General Newton's name with that American steam-heating company which failed so miserably in the streets of New York, and which, I think, the ENGINEERING AND MINING JOURNAL ridiculed for its bad engineering. It would be more manly in "Observer" to speak plainly, as I do. I have no doubt General Newton is sorry he ever gave even a passive indorsement to the plans of the eminent civil engineer who steered that company to shipwreck. The trouble with the case was, that a large operation was undertaken without sufficiently careful preliminary experiment on a small scale. A few of what "Observer" calls "futile dalliances" beforehand would have saved a lot of money and mortification. But the main honors of that failure belong to the civil engineers.

SPECTATOR.

APRIL 14.

NORTH CAROLINA MINING NOTES.

Written for the Engineering and Mining Journal by Arthur Winslow.

Mining in North Carolina shares at present with other industries of the country the effects of the general depression of business. Here and there, however, it is still in active progress, and exploration is pushed in many localities. A few notes upon the present condition of some few mines that the writer had occasion to visit during a recent professional trip to the central part of the State may be of interest to the readers of the JOURNAL.

Near Charlotte, the St. Catharine mine is working steadily. The ore is gold-bearing iron pyrites associated with quartz, in talcose slate. The shaft is down over 300 feet. The ore is passed through a Blake crusher, pulverized in a stamp mill of ten stamps, and concentrated upon two Frue vanners. No amalgamation is attempted here, and the free gold is not separated from the sulphides of the concentrates. The vanners work very satisfactorily, and the concentrates run from $130 to $160 a ton. These, like most of the concentrates of ores of this vicinity, are shipped to the Balbach Smelting-Works of Newark, New Jersey.

At the Rudisill mine, which adjoins the St. Catharine, a new plant has been put up, and experiments in working various ores are in progress. The ore of the mine is similar to that of the St. Catharine. The shaft is down about 350 feet. The ore is ground in a circular mill composed of cast-iron wheels, which are made to revolve in a cast-iron circular trough. The wheels weigh about a ton and a half each. In the bottom of the trough, is a groove some two inches deep, which is filled with mercury, and in which most of the free gold of the ore is amalgamated. When the mill is working, an electrical current is passed through the mercury and is thought to facilitate and quicken the amalgamation. The ground ore that passes through the sieve of the mill is carried over amalgamated copper plates and the floating scales of gold are arrested by a series of blankets. The sulphides are at present allowed to run off with the tailings. The amalgam and mercury are drawn off from the trough of the mill with the ground ore, and are separated from the latter in a rocker.

The Russel mine, near Thomasville, has recently been purchased by English capitalists. They intend to erect a hundred-stamp mill, and to work the ore by amalgamation. They feel very sanguine in regard to their prospects.

The old King's Mountain gold mine, in Cleveland County, is at present an utter wreck. The mine is filled with water, and the buildings and works are in ruin. The clays and decomposed surface rock are, however, constantly worked by the negroes living in the vicinity, who rudely wash and amalgamate the ore in sluices and riffles, and generally get about a dollar's worth of gold a day.

The tin deposits in the town of King's Mountain are still prospected upon, and work is done there that will soon prove whether the ore is of marketable value or not. I hope, at a later date, to give a full description of these tin deposits, as well as of those of other localities in the South.

The Ormond Iron Ore Bank is about four miles east of King's Mountain and within half a mile of the line of the Atlanta & Charlotte Air Line Railroad. The ore is mostly a massive, steel-gray limonite of fine appearance and quality. The vein is reported to be from 8 to 15 feet thick. Some of the ore is fine, granular, and friable. Three shafts have been sunk on the vein, one of which is over 150 feet deep. The hoisting plant at two of the shafts seems in good condition and to be kept in repair, although no work in the mine is at present in progress.

RALEIGH, N. C., April 9.

MAKING BOILER SHELLS AND LARGE TUBES WITHOUT JOINTS.

Concerning the recently reported contract of Charles Kellogg, of Buffalo, with a New York syndicate, for the furnishing of 50,000 tons of pipe at $80 per ton, the Buffalo *Iron Review* says: "The tubing is to be used in the Croton Aqueduct contracts, and Brown, Howard & Co., of Chicago, who have secured sections 1, 2, 3, 4, and 5 of the aqueduct, have purchased through a syndicate the Kellogg tubing. The Cambria Iron Company has offered to make it at $45 per ton and build the machinery on which Kellogg owns the patent. The machinery will be capable of making tubing as large as 60 inches in diameter, in lengths of from 13 to 16 feet, and it is confidently expected by this process to be able to make shells for steam-boilers all complete, and ready for the heads. The machines consist of cylindrical chambers around which rollers, similar in principle to the dudgeon expander, revolve and press the steel into required shape. A large outlay is necessary to erect and perfect all the machinery and plant, which has caused the seeming delay in the enterprise, but Chicago capitalists are now negotiating to build and equip a mill. Should the enterprise fulfill the expectations of its projectors, the old style lap and butt weld tubing will soon be a thing of the past, and a perfect revolution in the pipe trade will be accomplished.

The Caspian Petroleum Wells.—The news from Bakou shows that the production of naphtha goes on increasing. The Caspian Company has just made a boring 660 feet deep, into which a 6¼-inch pipe has been sunk, and the flow of naphtha equals 1600 tons per day, or from 400,000 to 500,000 gallons. M. Debour, close to the above company, has a flow of 340 tons a day, while the Bakou Company, with its 12-inch bore, is able to regulate the quantity by simply opening and shutting the valve on the top of the bore, and can take up to 1,500,000 gallons a day. Steamers from Batoum to Marseilles will now run twice a month, and the export trade from Batoum is rapidly extending. During 1884, from Batoum to Trieste, 18,000 casks of distillate (naphtha once distilled) were exported, and to Fiume 13,600 casks, while to Genoa 20,000 boxes of kerosene were sent, and to Venice 71,000 boxes. Evidently the whole of the Mediterranean trade will come into the hands of the Russians.

THE SILVER VEINS OF BUTTE, MONTANA.

We are indebted to Dr. E. D. PETERS, Jr., and to Mr. ALBERT WILLIAMS, Jr., of the United States Geological Survey, for the following particulars concerning the interesting Butte silver veins; to Dr. PETERS, for kindly placing at our disposal his private notes, from which he prepared an article on the subject for the United States Geological Survey; to Mr. WILLIAMS, for permission to use them in advance of the appearance of his official report. We are also indebted to Mr. S. RAUNHEIM for the accompanying Map of the Silver Veins.

The group of silver mines represented on this sketch, owned by the Alice, Moulton, Lexington, Silver Bow Mill mining companies and others, is situated exactly north of Butte City, at and near Walkerville; adjoining, on the south, the Mountain copper mine—on the east, the Gem, Jessie, Wild Bill, and Gray Rock mines. There are other silver leads still farther north, and numerous others are situated south and west of the center of Butte City, which may be represented by the Parrot and Original copper lodes, the Morning Star mine, and Stevens mine, situated 2200 feet south of this center; the Anselmo mine, three quarters of a mile west of this center; the Shonbar mine, three quarters of a mile south of this center. The Lexington has a 60-stamp mill. The Alice has an 80-stamp mill. The Moulton has a 60-stamp mill. The Silver Bow Mill has a 40-stamp mill.

These include the manganese silver group and present certain unique features. These manganese veins lie to the west of the copper group and most of them crop boldly to the surface, forming often large comb-like ridges of brown and black rock, stained principally by the oxides of iron and manganese and showing every evidence of thorough decomposition. These manganese ores are interesting to the miner from the fact that they are, without exception, argentiferous. They vary from three or four to several hundred ounces per ton. The average value of the selected ore extracted from these leads may be about twenty ounces; but in what chemical condition the silver occurs, I am unable to say positively, although I can state with certainty that it does not occur as either a bromide or iodide, as seems to be the popular opinion; nor, in my own investigations, have I been able to satisfy myself of the occurrence of chloride of silver except in traces.

The percentage of manganese varies as greatly as does the silver value, and unfortunately stands in an inverse ratio to it. The massive ores of manganese seldom contain more than a few ounces of silver, while the ores rich in silver have, as a rule, a gangue of quartz rather than of manganese. This is a serious drawback in smelting; for as quartz predominates in nearly all the Butte ores, an addition of manganese would be a most welcome flux.

A few analyses of these ores will illustrate this statement.

A sample of surface ore from the Nile mine, which represents fairly the better class of manganese ores, was found to contain:

Oxides of manganese	47·60
Oxides of iron	12·40
Silica	34·20
Alumina	3·70
Silver (32 ounces)	0·11
Sulphur	Trace.
Moisture and loss	1·990
	100·00

A massive piece of manganese ore—a mixture of braunite and psilomelane—from an unknown mine, contained:

Oxides of manganese	88·40
Oxides of iron	3·20
Silica	6·60
Silver (9 ounces)	0·03
Moisture and loss	1 77
	100·00

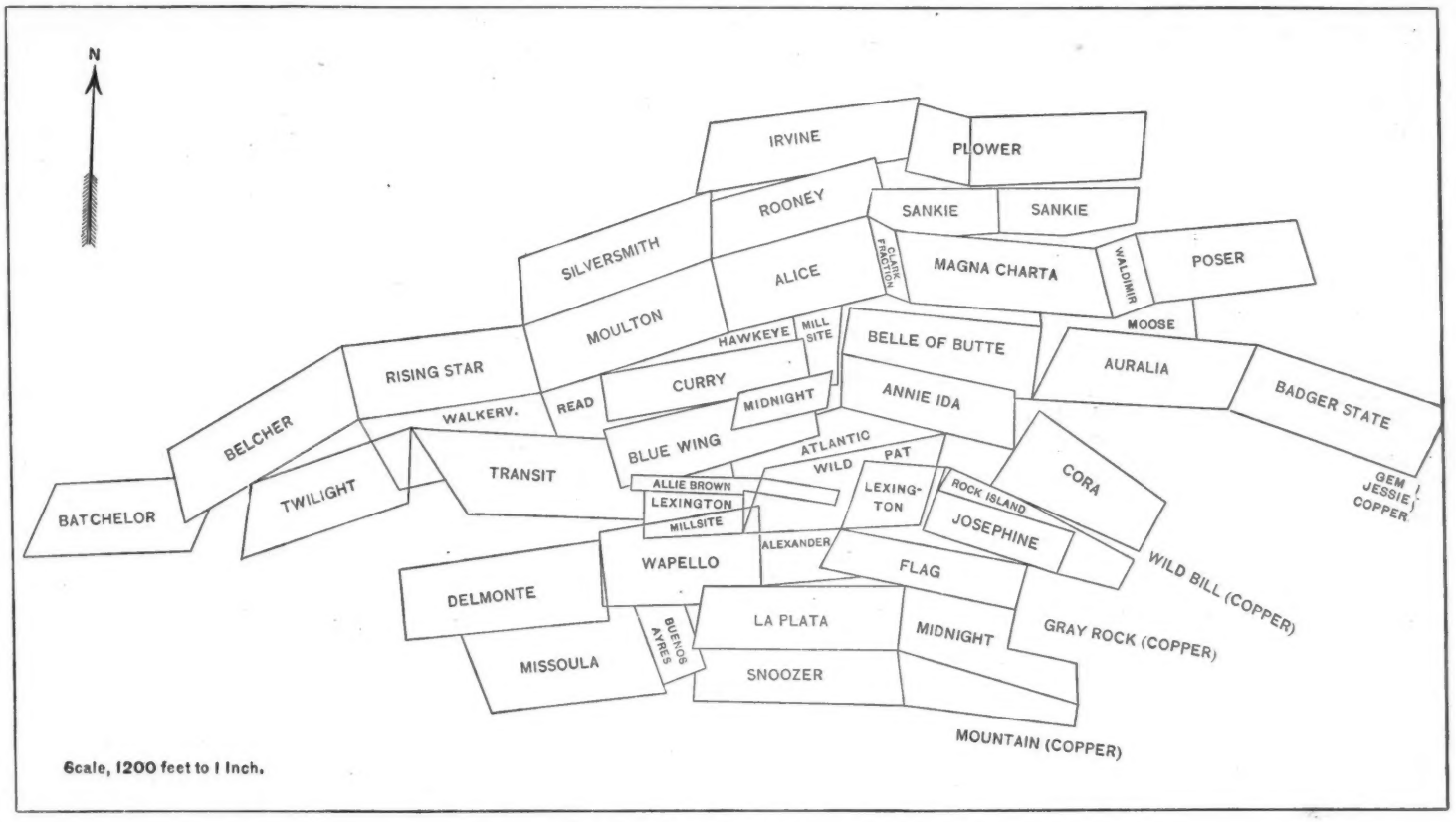
A mill sample of a twenty-ton lot of ore from a noted manganese mine near Butte, stoped at a depth of about forty feet from the surface, contained:

Oxides of manganese	21·000
Oxides of iron	7·700
Silica	66·400
Alumina	2·400
Silver (80 ounces)	0·275
Moisture and loss	2·225
	100·000

These analyses have been selected as types of the principal variety of manganese ores, and show plainly the decrease of manganese as the silver contents increase.

In describing the first division, or copper leads (ENGINEERING AND MINING JOURNAL, March 28th, page 209), of this district, I have shown how suddenly the vein contents change at the water-line from an almost free-milling silver ore, without any copper, to a massive sulphureted base metal ore, rich in copper, and generally poor in silver.

The transition is at least equally striking in the manganese-silver division. Here, again, the water-line constitutes the boundary, and the decomposed masses of brown, yellow, and black oxides of iron and manganese change abruptly into a gangue of silicate and carbonate of manganese (the former greatly predominating) with a large admixture of quartz, the whole being specked and threaded with minute granules and veinlets of zincblende, pyrite, chalcopyrite, and galena—the two latter



THE SILVER VEINS OF BUTTE, MONTANA.

minerals occurring in very subordinate quantities, and the entire amount of sulphureted minerals seldom exceeding five per cent of the ore, and much more frequently falling below three per cent. The silicate and carbonate of manganese have their characteristic pink color, and contrast very beautifully with the white quartz; but although the ore usually retains its full silver value, as compared with the upper decomposed portion of the vein, it has lost its worth as a flux in smelting, and, as a rule, is only fit for milling.

I am at a loss to say in what condition the silver occurs in this ore. The popular opinion is, that the silver is contained in the zincblende and pyrite; but when the entire weight of the minerals forms less than two per cent of a given sample that assays one and one half per cent in silver, it is difficult to reconcile that theory with the facts in the case. This is a very interesting and important subject for future research.

Although not generally so considered, the great mines that have given Butte its celebrity as a silver district—that is, the Lexington, Alice, Moulton, etc.—belong strictly to this manganese-silver group, although their water-line being comparatively near the surface, the oxidized zone continues but to a slight depth. They still show plenty of "pink manganese," as the carbonate and silicate of manganese are indefinitely termed by the miners; but on the whole, quartz predominates decidedly, and zincblende and pyrite occur in much larger proportion than in most other mines of this group.

I need hardly say that this necessitates a thorough chloridizing-roasting prior to amalgamation; and, in fact, none of the manganese ores that occur below water-line can be treated raw with any satisfactory results.

At present, with the exception of the great mines already mentioned, the manganese-silver belt is adding but little to the production of Butte. A few hundred tons per month of heavy manganese ore, assaying from fifteen to fifty ounces of silver, are mined and sold to the Boston & Colorado Smelter, and a much smaller quantity of more quartzose ores are treated in custom mills.

Few if any of these mines—always with the exceptions above mentioned—are worked below the water-line, as they are mostly too quartzose and too poor in silver to pay for smelting, nor can many of them stand the losses and heavy milling charges incidental to amalgamation. In time, with cheaper fuel and labor, I think a small proportion of them may prove of some value; but not before they come into the hands of companies that are willing and able to erect mills on a very large scale, and look to small profits per ton on large amounts of ore for their reward. At present, most of them are in the hands of poor men, who can do nothing with them themselves, but who hold them at prices that are virtually prohibitory to any sensible capitalist.

In my attempted classification of the Butte mines, I have encountered one difficulty, in the shape of the Gagnon mine, which is so different from either class described as to be positively unique, and demands at least a few words to itself. As regards geographical position, it is assumed, and I think correctly, to be the western extension of the great Parrot lode, and, apparently, while trying to hold its own as a copper lode, has, together with its extensions, the Original and the Butte Original, been so powerfully influenced by the conditions that governed the formation and filling of the silver group into which it extends that it has assumed a kind of mixed character intermediate between the two divisions, and yet possessing certain characteristics of its own.

While its percentage of copper is much lower than that of any of the true copper veins, its contents in silver are, for the most part, higher than any but the very richest of the silver group. Its gangue is principally quartz, and its chief ores are argentiferous zincblende, although the compounds of copper that occur in the Gagnon also carry a considerable quantity of silver, as does the iron pyrites, which occurs in considerable quantity. The ore occurs in very large and strong pay-chutes, and, so far as exploration has yet gone, certainly does not improve in depth. The best ore, both in quantity and quality, was found near the surface, several hundred feet above the present workings; but I am credibly informed that it is now rapidly improving in the deeper levels, and that every indication is present of other large bodies of rich ore in proximity.

A NEW METHOD FOR LAYING SUBMARINE PIPES AND TUNNELS.

The accompanying sketch shows that this, which is known as the Hall system, consists of a floating caisson provided with vertical shaft that comes above the surface of the water when the caisson is sunk into position, and with a stuffing-box at one end through which the tube or pipe passes.

The sketch shows the general arrangement of this apparatus, which is said to have been very successfully used in Australia, where a double tunnel 1230 feet long, between Balmain and the north shore of Sydney harbor, is reported to have been laid in less than seven weeks.

Each length of the tube was 10 feet, and these were bolted together by means of inside flanges, just as in the tubing of a shaft sunk by the Chaudron system.

The method of operating this ingenious system of laying large pipes under water is as follows: The pipes, whether of a size usual for gas and water or large enough for a railroad locomotive, are carried down to the river's edge in the usual way through a tunnel or open cut. If the water be deep and without current or other objection to the tubes resting on the general bottom level, nothing more than a leveling or evening of the bottom in the line of the tubes is necessary; but if the tubes should be covered, a trench of suitable width and depth to hold the caisson and tube must be dredged in front of the caisson. This dredging can be done by any of the usual methods. When this trench is prepared, the caisson is floated into position and anchored at the shore so that the tube projecting through the stuffing-box or boxes can be connected with the shore end of the tube or tunnel. Additional lengths of the tube are sent down the air-shaft of the caisson and put together by bolts through inside flanges. The outside of the tube is smooth, so that a tight joint can be maintained in the stuffing-box. As additional lengths are added, the caisson is moved forward by means of hydraulic jacks, which can push from the end of the tube itself, and it is said that in some cases a rope or chain attached to the prow of the caisson can be used to draw the caisson along in the trench. By means of the jacks, the caisson can be kept in line, and the work proceeds with remarkable rapidity and economy, there being no air-locks to delay or compressed air to provide.

In the case of the Sydney tubes, two tubes were laid at the same time, the caisson being wide enough for that purpose.

This system will attract the attention of engineers, and appears to be well adapted for many cases, and possibly even for such difficult and expensive examples as the long talked of tunnel under the St. Clair River, for the Grand Trunk & Canada Southern Railroad.

One method of anchoring the caisson by means of piles is shown in the sketch. The method of operating will be readily understood by any engineer.

Remarkable economy and speed of construction are the claims made for the new system. We trust its promoters will find an opportunity in this country for their realization.

Cost of Rail Manufacture in Germany.—Dr. Wedding gives the following figures to show the reduction in cost of production of steel rails in Germany. The figures were found in 1879 by a government inquiry. Exclusive of interest and sinking fund, the cost of rails at different German works was as follows during that year:

Works.	Materials, marks.	Wages, marks.	Material, marks.	Total, marks.
Koenigs- und Laura Huette.....	121·70	3·80	17·50	143·00
Union Dortmund.....	87·96	9·12	12·67	109·75
Bochum	85·85	9·43	25·63	122·00
Phœnix.....	114·54	7·90	3·56	126·00
Max Huette.....	123·20	10·40	6·40	140·60

At the same period, Dr. Wedding asserts, the cost in English works was not more than from 120 to 125 marks, and in some cases only 102 marks. Now the cost at all of the German works has fallen to about 90 marks, while in the Cleveland District, England, it is 84·70 marks.

MODERN AMERICAN METHODS OF COPPER SMELTING.*

By Edward D. Peters, Jr., M.E., M.D.

CHAPTER III.

METHODS OF COPPER ASSAYING.

The first step usually taken in the treatment of an ore of copper is to learn its value by determining the proportion of that metal that it contains. This process is called assaying, as distinguished from chemical analysis, which includes the further investigation as to the general composition of the ore.

We shall confine our discussion in this place to assaying only. The assaying of any given parcel of ore is necessarily preceded by the process of *sampling*, by which we seek to obtain, within the compass of a few ounces, a correct representative of the entire quantity of ore, which may vary in amount from a few pounds to several thousand tons. As a rule, it will lessen the chance of serious error in very large transactions, to divide the lot into parcels of not over fifty tons each, and sample each of these lots by itself.

The importance of careful and correct sampling can hardly be overrated, as upon this is based the entire transaction as between buyer and seller; nor is it consistent with judicious management to lavish great care and expense upon the laboratory and chemical department, while the process of sampling is left to ignorant workmen, and the sample itself, after being drawn, is exposed in such a manner as to invite tampering with it on the part of any dishonest employé. Such a warning will not seem superfluous to any one practically familiar with this department of metallurgical works.

The utmost care and vigilance in sampling and assaying should be required at every smelting-works, both in the interest of the works and in that of the ore-seller. The methods by which a correct sample of any parcel of ore may be drawn are too simple and universally known to demand any detailed description. In the case of pulverized ore or concentrates, no difficulty will be experienced in obtaining a perfectly fair sample; but in purchasing lump ore, the natural dislike to crushing any larger proportion of the same than is absolutely necessary is apt to stand in the way of accuracy. Unless the distribution of metal in the rock be wonderfully homogeneous, not less than 5 per cent of the entire parcel of lump ore should be taken for a sample and crushed to the size of hickory nuts. It is assumed that prior to this the entire shipment has been crushed or broken by hand to the ordinary size for heap-roasting. In ores whose copper contents is variable, 7½ or even 10 per cent of their entire weight should be taken and crushed as just mentioned, and after a thorough mixing of this representative sample, it should be quartered down in the usual manner—or sampled by means of automatic samplers—until only some 500 pounds are left, which should be crushed fine, and the subdivision continued until only about two pounds remain. With ores containing metallic copper or paying quantities of the precious metals, even greater care should be pursued, the finer pulverization of the sample keeping pace with its diminution in weight. In all works devoted to the purchase of ore, a large, light room, furnished with small jaw crusher, Cornish rolls and pulverizer, and provided with some simple form of mechanical sampler, are indispensable portions of the plant. Miners are exceedingly suspicious and sometimes unreasonable on the subject of ore sampling, and it occasionally is difficult to persuade them that the ore-buyers are not all in league to defraud them, taking advantage of their inability to determine for themselves the value of their ore.†

A small portion of the reduced sample is reserved for a moisture determination, which should be made without delay. The remainder is pulverized to pass through a 60-mesh screen, emptied on a large sheet of glazed paper, and is mixed in the most thorough and persistent manner, not less than five minutes of constant work being devoted to this operation, which is frequently a source of error. Unless otherwise agreed upon, all these manipulations should be effected in the presence and to the satisfaction of the seller's agent, to whom, after dividing the thoroughly mixed sample into three parts, one portion should be given, inclosed in a 6-ounce wide-mouthed glass bottle, and sealed with the seal of the works. A second sample should be reserved for assay in the smelting laboratory, while the third portion, being inclosed in a similar bottle, should be sealed by the representatives of both buyer and vender, and in such a manner that it can not be opened without injuring the seals of both parties. This is usually retained at the smelting-works, to be forwarded to an umpire mutually satisfactory only in case of a disagreement in results between buyer and seller: it is the duty of said umpire on reception of the package to carefully note the condition of the seals before breaking them. The adoption of this or some similar system will be found absolutely necessary to prevent disputes, and any carelessness in the execution of the routine as just described may lead to serious annoyances or even heavy losses, and to a decrease of confidence on the part of the ore-producers—a fatal blow to works dependent on their patronage.

The various means employed in the laboratory for the determination of the percentage of copper in any substance are given in the standard works so fully and clearly that a mere enumeration of the four methods that the author deems necessary and sufficient for the assay department of any copper works would probably suffice. But having been at considerable pains in former years to determine the causes and extent of the inaccuracies inseparable from certain of these methods, and also having noticed various essential precautions, not mentioned in the text-books on this subject, in connection with others, and finally not being aware that any satisfactory description of the electrolytic determination of copper has been published in any language, the author has introduced a few original observations where they seem required.

The four methods of assay that are quite sufficient for any commercial

* Copy-right, 1885, by the Scientific Publishing Company.

† The author being at present disconnected from any smelting enterprise, and having had a very large experience in the purchase of copper ore, is glad to have this opportunity to state that to the best of his belief the practice of cheating in ore-buying is almost unheard of in this country, and that in the greater number of cases, the sampling is slightly in favor of the miner, owing to the keen competition in this branch of business.

or technical laboratory, and yet that are every one essential if it be desired to fulfill every condition to the best advantage, are :

I. Titration with potassium cyanide (K Cy.).
II. Precipitation with zinc (or iron).
III. Colorimetric determination.
IV. Electrolytic determination.

To these may be properly added the Lake Superior fire-assay, as peculiarly suited to its local conditions. As the Swansea fire-assay for copper is described in every English metallurgical work, and as any reason for its adoption in this country can hardly be imagined, it is omitted.

I. Titration with potassium cyanide.

This well-known and rapid method, usually called "the cyanide assay," depends upon the power possessed by an aqueous solution of potassium cyanide to decolorize an ammoniacal solution of a copper salt, and is, under proper conditions, quite accurate enough for ordinary purposes. These conditions are as follows :

The use of measured and constant amounts of acid and ammonia.

The cooling of the ammoniacal copper solution to nearly the temperature of the surrounding atmosphere before titration.

The intimate mixture of the cyanide solution as it drops from the burette with the copper solution, and a sufficient though accurately limited time in which to accomplish its bleaching action.

The establishment of a certain fixed shade of pink at the standardizing of the cyanide solution, to which all subsequent assays must be as closely as possible approximated in color for the finishing point. This renders it impossible for any chemist to work with another person's solution until he has first standardized it himself, and determined its strength according to his own custom.

The absence of zinc, arsenic, and antimony, whose presence has long been known seriously to vitiate results, though exactly to what extent has never been demonstrated, until a series of experiments on this point was carried out in 1882 under the direction of the author.

From a long list of differing results, some of them even contradictory, the following deductions were drawn :

The presence of zinc in quantities below 4½ per cent has no perceptible influence on results.

Five per cent of zinc, in a siliceous ore of copper, containing no other metals except iron, caused a constant error on the plus side of about 0·22 per cent, which increased in tolerably regular manner with an increased percentage of zinc.

After eliminating a few results that varied very greatly and unaccountably from all others, an average of about six determinations of each sample yielded the following figures. An ore similar to that just described, but somewhat richer, was used in every case, and the zinc added in the shape of a carefully determined sulphide, allowances being also made for the increase in the weight of the ore sample resulting from this addition of foreign matter.

Ore free from zinc, 11·6 per cent copper.
No. 1 with 4 per cent zinc, 11·46 per cent copper.
" 2 " 4½ " " 11·55 " "
" 3 " 5 " " 11·72 " "
" 4 " 6 " " 12·10 " "
" 5 " 8 " " 13·20 " "
" 6 " 10 " " 13·30 " "
" 7 " 15 " " 13·90 " "
" 8 " 20 " " 13·80 " "

The presence of arsenic and antimony in much smaller proportions—one per cent or less—may cause errors on either plus or minus side to the extent of one half a per cent or more, and in larger quantities will generally render the test totally unreliable.

Another important and oft-neglected precaution is the testing of the precipitate of hydrated oxide of iron caused by the addition of ammonia to the original solution. This bulky precipitate, especially in the case of mattes and highly ferruginous ores, may retain a considerable amount of copper that even the most careful washing will not remove, but which may be speedily determined by dissolving the precipitate in the smallest possible quantity of muriatic acid, saturating with ammonia, and again titrating if any blue coloration is produced. The following results, taken from the note-book of an experienced chemist, who had never been aware of this possible source of error until it was accidentally mentioned to him by an assayer in the employ of the writer, and who at once instituted careful experiments to ascertain the probable extent of the mistakes that he had made while acting as assayer to large smelting-works, give some idea of the serious discrepancies that may arise from the non-observance of this precaution :

Character of sample.	Without re-solution of precipitate.	With re-solution of precipitate.
No. 1, pyritous ore	21·2 per cent copper.	23·7 per cent copper.
" 2, bornite	37·8 " "	42·4 " "
" 3, cupola matte	27·7 " "	31·2 " "
" 4, reverberatory matte	46·4 " "	47·4 " "
" 5, blue metal	57·7 " "	58·2 " "
" 6, white metal	74·7 " "	75·2 " "
" 7, regule	86·2 " "	86·4 " "
" 8, blister copper	97·3 " "	97·2 " "

As might be expected, the greatest discrepancies exist in connection with those samples containing the largest amounts of iron, and decrease to nothing as the iron contents diminish.

In the absence of the injurious elements—zinc, arsenic, antimony—the cyanide assay is sufficiently accurate, and, from its simplicity and rapidity of execution, it is peculiarly adapted to the daily working assays from the mine, smelter, and concentrator. In fact, it is the mainstay of the overcrowded metallurgical assayer, and can be used for nearly every purpose, except for the buying and selling of ores and copper products, and for the determination of very minute quantities of copper in slags. It is frequently employed with satisfaction for the last-named purpose, a much larger amount than usual being taken, in order to obtain a solution sufficiently rich in copper to exhibit a reasonable degree of color.*

II. *Precipitation with Zinc.*—This is simply a modification of the well-known Swedish method, and has been so arranged by Kerl (*see* his work on assaying) as to be suitable for every variety of ore or product, regardless of impurities. In fact, its chief value in the modern metallurgical laboratory is to take the place of the cyanide method in those cases in which the occurrence of deleterious substances forbids the employment of the latter.

The principal drawback to this method of assay is the delay caused by the precipitation, and the drying and weighing of this precipitate, whose strong hygroscopic quality renders the latter manipulation tedious and frequently inaccurate. This can be easily obviated by dissolving the precipitate, now free from all impurities, and determining the percentage of copper by the ordinary cyanide assay. This modification can be strongly recommended.

III. *The Colorimetric Determination of Copper.*—This is reserved almost exclusively for the determination of minute quantities of copper contained in slags, tailings from concentration, and similar products.

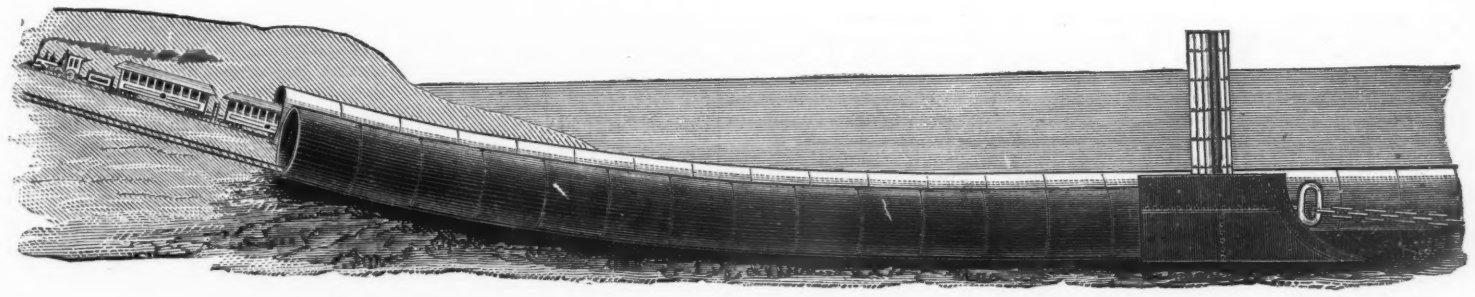
Heine's modification of this method, as described by Kerl, is perhaps the most convenient, and with proper solutions for comparison, preserved in bottles of coloress glass and of exactly the same size, yields results that can not be surpassed. It is seldom employed for substances containing over one and one half per cent of copper, and may be relied upon to show differences of $\frac{5}{100}$ of one per cent ; results, however, depending largely upon the skill of the operator and his capacity for discriminating almost invisible shades of color.

IV. *The Electrolytic Method, or Battery Assay.*—This method is suited to every class of material and every percentage of copper, from the highest to the lowest ; and, owing to its ease of execution and extreme accuracy, has already largely supplanted the ordinary analytic methods, and bids fair to do so altogether in all important cases. Among those assayers who do not yet practice it, there seems to be an impression that it is difficult of execution, and in several cases under the author's observation it has been abandoned after a few futile efforts. In these instances, there must have been some direct violation of the laws governing the generation and transmission of electricity—it being always the battery that was complained of—and as a similar though usually much more extensive and complicated form of battery is under the charge of every telegraph operator, the disappointed assayer should feel encouraged to persist. The following apparatus and method of procedure will be found convenient, although every assayer has his own private variations :

MATERIALS AND APPARATUS FOR THE ASSAY ITSELF.

Nitric acid, C. P.
Muriatic acid, C. P.
Distilled water.
Strong alcohol.
Small beaker, 6-ounce.
Glass funnel and filters.
Sand-bath.
A weighing-in-balance.
An analytical balance.

* A much more practical description of this assay than exists in any of our text books may be found in the appendix to the pamphlet issued by Hunt and Douglas in the interest of their very ingenious wet method for the extraction of copper.



A NEW METHOD FOR LAYING SUBMARINE PIPES AND TUNNELS.

Long Distance Telephony.—Recent experiments in long distance telephony have been carried out in the Argentine Republic, the system being that of Van Rysselberghe. After the first few trials in Buenos Ayres itself, conversation was successfully maintained between Buenos Ayres and Belgramo, a distance of 22 kilometers (13·6 miles) ; between Buenos Ayres and La Plata, 70 kilometers (43·4 miles) ; and between Buenos Ayres and Rosario, 1350 kilometers (837 miles). These experiments, which were coincident with the *fêtes* of the foundation of the Republic of La Plata, have given most excellent results.

Skrivanow Battery.—This battery, contained in two small boxes, 10 inches long, 8 inches wide, and 6 inches high, consists of a number of cells, only an inch in width, in which zinc plates and chloride of silver are placed in certain proportions, with a weak solution of potash as the excitant. It is said to be sufficient for an arc lamp of 600 candles nominal, or for 75 small incandescent lamps. Local authorities contemplating a great expenditure upon gas-works, with all the inconvenience and perpetual annual cost, will do well to pause and consider what is doing elsewhere to provide at far less than the cost of gas a more brilliant and beautiful illuminant.

ANCIENT QUARRYING IN PONAPÉ ISLAND.

Capt. L. U. Herendeen, of San Francisco, says *Science*, communicates the following notes on prehistoric structures in Micronesia. American missionaries recently settled at Ponapé may, it is hoped, furnish additional details hereafter.

A few years ago, I visited Ponapé Island in the Pacific, in east longitude 158° 22′, and north latitude 6° 50′. The island is surrounded by a reef, with a broad ship-channel between it and the island. At places in the reef, there were natural breaks that served as entrances to the harbors. In these ship-channels, there were a number of islands, many of which were surrounded by a wall of stone five or six feet high; and on these islands, there stood a great many low houses, built of the same kind of stone as the walls about them. These structures seem to have been used as temples and forts. The singular feature of these islands is, that the walls are a foot or more below the water. When they were built, they were evidently above the water, and connected with the mainland; but they have gradually sunk until the sea has risen a foot or more around them. The natives on the island do not know when these works were built; it is so far back in the past that they have even no tradition of the structures. Yet the works show signs of great skill, and certainly prove that whoever built them knew thoroughly how to transport and lift heavy blocks of stone. Up in the mountains of the island, there is a quarry of the same kind of stone that was used in building the wall about the islands; and in that quarry to-day there are great blocks of stone that have been hewn out, ready for transportation. The natives have no tradition touching this quarry—who hewed the stone, when it was done, or why the work ceased. They are in greater ignorance of the great phenomena that are going on about them than the white man who touches on their island for a few hours for water. There is no doubt in my mind that the island was once inhabited by an intelligent race of people, who built the temples and forts of heavy masonry on the high bluffs of the shore of the island, and that, as the land gradually subsided, these bluffs became islands. They stand to-day with a solid wall of stone around them, partly submerged in water.

MAGNESIA AND ITS PRODUCTION.

Aigues Mortes, on the Mediterranean, says the *Engineer*, is known to all geologists as a remarkable instance of the slow upheaval that is constantly going on in many places. In former times, it was a seaport of considerable importance; but it now stands at the head of mud flats stretching more than two miles inland. Partly in consequence of these geological changes, which have rendered the locality convenient for dealing with large quantities of sea-water, Aigues-Mortes possesses at the present time features of interest to the engineer, particularly to the engineer occupied in the production of steel. Works of no great magnitude yet, but of certainly growing importance, have been constructed here for the production of magnesia. The mine from which this mineral is extracted is fairly rich and of no inconsiderable extent, being nothing less than the sea itself. With so large a property to draw upon, the company formed to exploit it is free from the apprehension of exhausting its mine before a satisfactory return for the outlay has been obtained. It has, moreover, the great advantage of being able to work upon it in any part of the world where the produce may be required. These circumstances constitute features in the magnesia-works of Aigues-Mortes not possessed by every mining undertaking.

The quantity of magnesia in sea-water is sufficiently great to render its extraction profitable. In a cubic meter of water, there are about two kilograms of pure magnesia existing as a chloride or a sulphate. To obtain this in the form of hydrate, the cost only slightly exceeds the value of an equivalent quantity of lime required to effect the transformation, the processes being exceptionally simple. The chemical reactions relied upon to give the magnesia in the uncombined state are these: When milk of lime is poured into sea-water, the molecule of chloride of magnesium is broken up, chloride of lime being formed, which remains in solution, and a milky precipitate of hydrate of magnesium is thrown down. Similarly from the sulphate of magnesium, we obtain the same precipitate and sulphate of calcium. But the great bulk of the magnesia exists in sea-water as the chloride. The hydrate, when calcined, assumes two different states, according to the temperature at which the calcination has been effected. If the temperature has not exceeded 900 degrees Fahr., the resulting caustic magnesia is capable of resuming its water of hydration and setting hard like a cement. But if the substance has been raised to a white heat, it no longer retains that property, and is indifferent to the action of water.

The magnesia extracted by these means at Aigues-Mortes is intended to be used as a substitute for dolomite, or magnesian limestone, in the Bessemer process of steel manufacture; and for this purpose, it is molded into the form of bricks. It seems highly probable that these magnesia bricks will in a short time come into general use for this purpose; and such works as those at Aigues-Mortes will then be called into existence in many places. A new and important industry may in this way be established. Equal to lime in infusibility, magnesia is a more perfect type of a refractory substance, and is applicable to every use in which it is not brought into contact with an acid substance in a state of fusion. The ease with which it may be molded into bricks is also a practical advantage of no small value; and such bricks are greatly superior in many respects to those made of dolomite. A dolomite brick needs an anhydrous cement—usually coal-tar is employed for the purpose; it will keep unaltered only a few days, even when every precaution is taken to shield it from atmospheric influences, and it is of too frail a nature to permit of its being handled roughly. But a magnesia brick is similar to one of common clay in all these particulars. In the matter of cost, too, the advantage is on the side of the magnesia brick. Per ton, the latter costs almost exactly twice as much as the dolomite agglomerations; but as 130 pounds of the limestone are required per ton of steel produced, while 40 pounds of magnesia are sufficient for that quantity, the relative cost is as 2 to 3. This is an important merit, and the one that will commend itself most forcibly to the manufacturer of steel. It is, moreover, to be borne in mind that, when magnesia is used in the converters, the duration of the linings is increased threefold. Possessed of these numerous and great advantages, magnesia bricks can hardly fail to supplant the dolomite in the use to which the latter are put in the Bessemer processes of steel making. It is hoped that a further use of magnesia may be made by employing it as a reagent, in many cases, in place of lime. In such a case, the scoriæ—phosphate of magnesia instead of phosphate of lime—would be reduced to about one third.

At Aigues-Mortes, the sea-water is pumped into a large tank of masonry, and an equivalent quantity of milk of lime is run into the tank along with it. The flow, both of water and milk of lime, is continuous during the time of working, the relative quantities of each being calculated to give the requisite proportions. The mixture flows from this tank into two similar tanks in succession, and is briskly stirred in each by agitators driven by steam, or often by horse-power. The precipitate, now in suspension, is to be obtained by filtration, and for this purpose the water is run upon filtering-beds. These filtering-beds are formed of fine, clean sea sand spread over the bottom of shallow excavations about 1000 feet long and 16 feet broad. The magnesia is deposited upon the sand as a heavy tenacious mud, and the supernatant liquid flows off clear at the far end of the bed. When a sufficient quantity has collected, which is known by the sand ceasing to decant properly, the inflow is stopped, and the bed, with its charge of magnesia, is left to dry up in the sun. This takes from twenty to thirty days. Of course, this method of drying can be adopted only in the summer months, and not even then in every climate. But the drying could be done artificially without adding greatly to the expense. The managers of the works at Aigues-Mortes have now under consideration a plan of this character to enable them to work all through the year. With their present arrangements, they are treating 1000 cubic meters of sea water a day; and they obtain from the filtering-beds an average of 2 pounds of magnesia per square yard of surface per day. The extent of the beds is increasing to treat a larger quantity of water in the coming summer season. The present output is six tons a week. The dried magnesia slime is stowed away in sheds, to be calcined and molded into bricks, the manufacture of which is carried on throughout the year.

CHINESE IRON FOUNDRIES AND RICE-PAN CASTING.*

As a notable example of the patient, plodding industry shown by the Chinese, may be instanced the manufacture of the very thin cast-iron rice-pans that may be seen in any cook-house in Hong Kong. The principal seats of this industry are at the towns of Sam-tiu-chuk and Fatshan. The iron used is obtained by smelting magnetic oxide. The ore is broken up and smelted with charcoal in a very primitive smelting-furnace some eight feet high. The cupola is cone-shaped, having its apex at the bottom. The single tuyere-pipe is of earthenware, the opening for the emission of the blast being inclined downward. The furnace itself is of earthenware, strengthened by hoops and longitudinal straps of iron. The whole is lined with clay several inches thick. The internal diameter at the bottom is about two feet, and at the top three feet and a half; the inside depth being about six feet. The blast is produced by a rude bellows, formed of a wooden box five feet long by three in horizontal and a foot and a half in vertical section. This box is divided longitudinally into two compartments, each eighteen inches square in vertical section. In each of these compartments, a piston works, the valves being so arranged that one piston is effective in the up and the other in the down or return stroke. As there is no air-chamber, the blast is not perfectly continuous. The fuel used is charcoal; and the furnace, being first heated by starting a fire with fuel alone, is then filled up with alternate layers of charcoal and ore in small fragments. The blast is urged, and, after a sufficient time has elapsed, the molten metal is drawn off from a tap-hole at the bottom, and cast into ingots. These, when intended for export, are afterward reheated in an open forge.

For making the very thin rice pans, which are cast without handles, pure iron of native manufacture alone is used. The molds in which the pans are cast require weeks of tedious and patient labor to bring them to perfection. They are composed of two parts, an upper and a lower, and are made of carefully puddled clay. The great secret of the process that enables the Chinese founders to cast their iron pans of such large diameter, yet so thin and light as to be scarcely thicker than a sheet of paper, appears to be the use of highly heated molds and pure charcoal pig-iron. When the ovens and their contents have cooled down, which takes about two days, the luting attaching the upper portion of the mold to the lower is carefully removed, and, the molds being separated, the pan can be extracted. When the operation is successful, the same mold can be used several times. The pans now have each attached to its bottom a lump of iron, which, from the extreme brittleness of the pans, requires the greatest care in its removal. These runners are carefully sawn off, and the edges smoothed down: the pan is then ready for the export market. Handles are attached to these pans by the retail dealers. The pans made at Fatshan differ from the preceding in being cast with handles attached near the rim to the inner surface of the pan, which necessitates the breaking of the mold at each casting. They are usually cast much thicker and heavier than those of Sam-tiu-chuk, and occasionally one third of foreign pig-iron is mixed with the native iron for casting. In other respects, the process followed at both places is the same.

Metallic Gallium.—L. Ehrlich, in the *Chemiker Zeitung*, says that Gallium was discovered by Lecoq de Boisbaudran in 1875, in a zinc ore from Pierrefitte, and afterward found in a variety of blende from Bensberg-on-the-Rhine. The author was the first to prepare the metal in Germany for commercial purposes in the establishment of Dr. Schuchardt. In a preliminary experiment, 0·6 grm. of the metal was obtained from 80 kilos of zincblende. Certain improvements in the process made it possible to extract, within two or three days, the gallium contained in 6 cwts. of the mineral. The melting-point of the metal is 30·5 degrees, and its luster exceeds that of mercury.

* From the *Journal of the Iron and Steel Institute*.

FURNACE, MILL, AND FACTORY.

The Colorado Iron-Works Company began a suit in the District Court at Denver, Colo., April 6th, against the Colorado Patent Coke Company *et al.*, to recover $3586.25.

Carnegie's Bessemer Steel-Works, at Homestead, Pa., will soon double their capacity and will manufacture exclusively structural steel.

After an idleness of three months, Price, Kelly & Co.'s Sharpsville, Pa., furnace was started up April 9th, furnishing work for 100 men.

It is said that L. P. Ewald, President of the Ewald Iron Company, Lyons County, Ky., contemplates removing his rolling-mill to Paducah, Ky., and spending a large sum on new works.

Shoenberger & Co., at Pittsburg, it is reported, are making arrangements to build a steel plant and introduce the Bessemer process.

Chess, Cook & Co. are looking for a site along the Baltimore & Ohio Railroad to erect a nail factory. The citizens of McKeesport, Pa., are endeavoring to induce the firm to locate at that place, as are also the Braddock, Pa., Councils.

Work has been resumed on the new blast-furnace a the Edgar Thomson Steel-Works. Some months ago, when the works closed down, the foundation for the new furnace was partly built, but work was suspended with the shut-down. It is the intention to push the building of the furnace to a completion as soon as possible.

The Philadelphia Bridge-Works at Pottstown, Pa., which were working with a largely decreased force, have received a contract involving the construction of 70,000 pounds of manufactured iron for the new steel-works at Pottstown, which are to be the largest of the kind in the Schuylkill Valley.

Colebrook Furnace No. 2, at Lebanon, Pa., recently produced in one day 114 gross tons of pig-iron. The fuel used was but one ton for each ton of iron.

The Morris County Machine and Iron Company, of Dover, New Jersey, has shipped this week three carloads of mining machinery, weighing about 60,000 pounds.

Messrs. Griffith & Wedge, of Zanesville, Ohio, have established at El Paso, Texas, an agency for the sale of mining machinery in Arizona, New Mexico, and Mexico. Mr. K. Posse, M.E., will be in charge.

The committee appointed by the creditors of the Palmer Wire Company, Palmer, Mass., recommended, at a meeting held April 15th, that it was expedient to assign the assets of the corporation to trustees for the benefit of creditors. Jeremiah Abbot, of Boston, and L. E. Moore, of Palmer, were named as such trustees.

The reorganization of the Albany & Rensselaer Iron and Steel Company at Troy, New York, with a capital of $2,500,000, is announced. Negotiations are pending for the erection of three large furnaces, with a capacity each of 110 gross tons.

The Mansfield Elastic Frog Company, at New Haven, Conn., with a capital of $100,000, failed April 16th. It is stated that the concern has been running since 1869, but their style of frog going out of use, it lost money when it turned to manufacturing edge tools. Three New York iron firms pressed the assignment. Work will be continued for the present. Their liabilities in July, 1884, were $44,527, and have since increased.

LABOR AND WAGES.

The Columbus & Hocking Coal and Iron Company has given official notice that no merchandise orders would be issued to miners after April 15th, but that the employés would be paid in cash each Wednesday for the preceding week. This action is in pursuance of the law abolishing the truck system, which was recently enacted by the Legislature and pushed through by the labor advocates in the interests of the miners. The small operators opposed the measure.

The Grand Trunk Railroad has announced a reduction in the wages of all the road's employés at Toronto. The reduction is ten per cent on salaries over $600, and five per cent on those from that sum down to $370.

The railroad coal miners in convention at Pittsburg, Pa., April 14th, unanimously decided to continue the strike for 3 cents a bushel for mining.

The reduction of 5 cents a ton, making it 70 cents i summer and 80 cents in winter, has not been accepted by the miners at Streator, Ill., and a strike is the result.

It is stated that one hundred puddlers left Pittsburg, Pa., April 14th, for New Zealand, to work in a large iron mill just finished there.

A delegation of citizens from Joliet, Ill., have asked the governor to call out the militia, for the protection of the laborers from the violence of the stone quarry strikers of Joliet and Lemont. The governor declined to use the militia until the civil authorities demonstrated that they were unable to maintain the public peace and safety of the community. The refusal of the companies to accede to the demand for $1.50 a day, it is thought, has exasperated the strikers.

TRANSPORTATION NOTES.

At a stockholders' meeting recently held at Calabasas, Arizona, the organization of the Calabasas, Tucson & Northwestern Railroad Company was perfected. The route proposed will run from Calabasas northward through the fertile Santa Cruz Valley to Tucson, thence to Florence, Phœnix, and Globe. The arrangements embrace a railroad from Tucson to Quijotoa, the center of an important mining district. The report says the members of the company are principally capitalists of New York and a foreign syndicate, with ample means immediately to carry out the enterprise.

The extension of the Pennsylvania Schuylkill Valley Railroad to the anthracite coal regions will be built during the present year.

The Philadelphia & Reading Railroad statement for the first quarter of the fiscal year ended February 28th shows a net profit, excluding rental and interest, of $2,164,679, and, deducting rental and interest, $3,902,374, leaving a net loss on the railroad for the quarter of $1,737,695. The Reading Coal and Iron Company's loss for the quarter, including interest, is $436,163. The loss of both companies for the quarter, including rentals and interest, is $2,173,859.

The Illinois & Michigan Canal has been opened for navigation from Bridgeport to La Salle to boats drawing four feet eight inches.

As a sequel to the fire of January 7th, Janeway & Co., of New Brunswick, New Jersey, have brought suit for $300,000 damages against the Pennsylvania Railroad Company. The amount involved, the peculiar circumstances of the fire, and the question as to the railroad company's liability will make the case important.

A new line of steamers running between New York and Venezuela is about to be established, and the first steamer, which has been built in England, is expected to arrive in this port the latter part of next month or the first week in June. The company has received a concession from the Venezuelan government to navigate the Macareo River and to land cargo at Port Lastablas. All the other vessels bringing supplies have to discharge their cargoes at Ciudad Bolivar, and reship to their destination at the mines, causing double expense.

A London syndicate has entered into a contract with the government of Honduras to build and operate in that country an interoceanic railroad. The concession granted by Honduras includes land-grants and mining privileges.

The Court at Roanoke, Va., has authorized the receiver of the Shenandoah Valley Railroad to borrow $300,000 to pay off interest, wages, and floating debt. The statement is made that the Shenandoah Valley line will probably fall into the hands of the Baltimore & Ohio Railroad, which will utilize it as a link for a Southern connection.

The United States Court at Pittsburg, Pa., has authorized the receivers of the Pittsburg & Western Railroad to issue receivers' certificates to the amount of $210,000. The certificates will bear interest not exceeding 6 per cent per annum, and will be used in payment of wages, accommodation paper outstanding, judgments obtained for land damages, and counsel fees.

The franchise and property of the Roanoke Navigation Company, which fell into disuse after the war, and was dissolved by the courts of Virginia two years ago, has been bought by parties who have now reorganized under the name of the Roanoke Navigation and Water Power Company. There is 100 feet fall to the mile in the canal from Gaston to Weldon, and with slight expense a dam six feet high at Gaston will throw the entire volume of the river into the canal.

COAL TRADE NOTES.

CANADA.

PROVINCE OF NOVA SCOTIA.

Three slopes are now working at the Spring Hill collieries and an average of fifteen hundred tons of coal raised daily. April 7th, 1693 gross tons were shipped by rail. This is said to be the largest output yet attained by any colliery in Canada.

CHINA.

The Chinese are laying aside their prejudices in a new direction, and intend to work their coal mines in a systematic manner, with the most experienced European miners. The Chinese government has applied to the great John Cockrill Company for thirty miners to superintend the extensive collieries that they propose to open up in certain of the rich deposits already prospected. Very liberal salaries have been offered, and the appointments have been eagerly accepted. These thirty miners thus officially engaged are likely to be followed by another thirty, who will proceed to China on the chance of obtaining an engagement on their arrival. As the former will probably be glad to avail themselves of European aid, there is hardly a doubt that the latter will speedily obtain the appointments they desire. It is probable also that the Chinese will obtain a plant of the necessary machinery to work their mines properly. But they will soon learn the ways of the outside barbarians, and in opening up these other mines will adopt the system they learn and not call in the aid of Europeans. In this, the Chinese are very expert. There are large deposits of coal in China, and with the assistance referred to they will very quickly be developed so as to be of more importance than heretofore.

COLORADO.

The parties who have been boring for coal in the vicinity of Louisville, Boulder County, have struck coal about 220 feet from the surface.

FREMONT COUNTY.

It is reported that the Atchison, Topeka & Santa Fé Railroad has purchased the Thornton coal mine, on the south side of the river, opposite Cañon City. It will extend a track to Coal Creek, and put on a large force of miners at an early day.

ILLINOIS.

In the shaft that is sinking at Ashley, a six-foot vein of coal has been struck at a depth of 490 feet.

The Lincoln Coal Company's shaft and landing caught fire at half-past one o'clock A.M., April 16th, and was soon a mass of flames. Six miners were at the bottom. The fire was caused by the explosion of a torch in the oil-room. Cages were kept running until a few minutes before the wire cable snapped in two. The imprisoned miners succeeded in making their way to the escape-shaft, nearly a mile away, so that no lives were lost, as was at first feared. The fire was extinguished with a loss of about $10,000.

OHIO.

The Inspector of Mines' annual report just issued shows that, notwithstanding the loss of output all over the State by the floods, labor troubles, and other causes, and the fact that the average time made by the mines of the State during the year was only 199 working days, the total production is but 579,177 tons less than that of 1883. But one accident of any kind occurred to 115,910 tons of coal mined, and but one life was lost to 294,333 tons. Of the 7,650,062 tons produced in 1884, 6,638,913 tons were lump and 1,011,149 nut. There are 503 mines in the State, employing 16,983 miners and 3118 other workmen, according to statistics gathered ; but the number of men given probably exceeds the number actually engaged in the industry, which he credits to the migratory character of th miners, some of whom have been enumerated more than once. The number of tons of iron ore mined in 1884 shows a total of 276,286. The aggregate number of tons of limestone mined in 1884 has been 125,305 and the number of tons of fire-clay mined during the same time is given as 168,208.

PENNSYLVANIA.

ANTHRACITE.

The Pennsylvania colliery, at Mount Carmel, resumed work April 14th, after a suspension of four months. The shipping capacity of this colliery is said to be the largest in the anthracite coal region. The announcement is made that another large mine is about to be opened.

Press dispatches announce that warrants were ob-

tained April 15th for the arrest of Thomas Beaver, of Danville; Daniel Edwards, of Kingston; John C. Bullitt, of Philadelphia; and George S. Geisinger and Edward S. Dwight, members of the Kingston Coal Company, owners and operators of extensive collieries near Kingston, charging a violation of the mine laws in not providing ambulances for the conveyance of injured men.

A new breaker is erecting at Spruce Forest colliery, Wadesville.

The new slope at Lawrence colliery is nearing completion. When finished, it will be one of the deepest slopes in the region, being 1260 feet from the surface to the bottom of the fourth lift.

Mine Superintendent Waddle, of Mill Hollow, is at Beaver Meadow fixing the prices of the loose coal left in the different breasts there by the miners in 1876, when the collieries shut down. Messrs. Coxe Brothers & Co. have concluded to settle up all claims.

The prospect of recovering the bodies of the victims of the Cuyler colliery disaster at Raven River is now more satisfactory. The owners of the colliery are doing every thing in their power for the families of the unfortunate miners, and are almost constantly in the mine urging the miners on in their work.

BITUMINOUS.

A co-operative coal mining company has been formed by some of the miners engaged in the late strike on the Monongahela River, for the purpose of carrying on an independent mining business.

The Mine Commission appointed by Governor Pattison "to provide means of proper legislation to secure the health and safety of men employed in the bituminous coal mines of Pennsylvania" met in Pittsburg April 14th. Senator Ross, of Greene County, was elected President, and J. Franklin Nutt, of Clarion County, Secretary of the Commission. Representatives were present from all parts of the State. A bill will be drawn up and presented to the Legislature, which, it is thought, will insure safety to miners.

The suit of Edwin E. Montell, of Baltimore, against Charles D. Norton, trading as Charles D. Norton & Co., of Philadelphia, to recover damages for an alleged breach of contract growing out of a business transaction, was put upon trial in the United States Circuit Court in that city April 14th. For the complainant, it was urged that in 1882 and 1883, under four contracts, he bought from the defendant some 12,000 tons of Youghiogheny gas-coal, to be delivered in monthly shipments at $3.60 for part and $3.40 a ton for the remainder; that subsequently the price of gas-coal advanced, and the defendant, after having delivered about fifteen hundred tons, refused to deliver any more; that owing to the advance in price no sales of the kind of coal in question were afterward made at less than $4.66 nor higher than $4.86 a ton. Mr. Montell seeks to recover the difference between the price under the contracts and the subsequent market price, which it is claimed will amount to some $13,000 or $14,000.

COKE.

It is reported that a syndicate of Shenango and Mahoning Valley, Pa., blast-furnace owners has been formed for the purpose of buying a large block of coking coal lands in the Connellsville field, with the view of manufacturing coke for use in their furnaces.

The coal at the Spring Grove works is nearly exhausted. The owners, James Cochran & Sons, have a body of coal on Dickerson Run, and are preparing to change their base of operations across the river, where they are now preparing to build 100 new ovens.

WEST VIRGINIA.

The Mount Carbon Company, of London, England, has been authorized to transact business in this State. The company owns a large tract of coal land in Fayette County, and proposes to operate an extensive colliery there.

GAS AND PETROLEUM NOTES.

The exports of petroleum, refined, crude, and naphtha, from all ports from January 1st to April 11th, are as follows:

	1885. Gallons.	1884. Gallons.
From Boston	1,593,682	1,799,894
Philadelphia	22,427,567	13,369,087
Baltimore	2,634,814	1,528,887
New York	92,401,053	90,374,310
Total exports from United States,	119,058,106	107,072,178

CALIFORNIA.

Several oil-wells have been bored within the city limits of Ukiah, Mendocino County, resulting in the discovery of some good crude petroleum, which has been sent to San Francisco to be tested.

PENNSYLVANIA.

The 12-inch and plate-mills at Graff, Bennett & Co.'s Thirty-third street works at Pittsburg, started up April 9th, to test the merits of the natural gas that has been introduced in the works.

The different natural gas companies are greatly bored by people who have some patent to prevent explosions. It is said that some of them even ask from $3000 to $5000 guarantee before they will show the patent. So far, not one of the devices has been worth any thing, and most of them are experiments tried by the companies and thrown away.

The McNary gas-well at Washington is down 1300 feet. Two wells are drilling near Hickory.

GENERAL MINING NEWS.

ALASKA.

The British minister at Washington has sent a letter to the governor-general of Canada, inclosing an extract from the report of the governor of Alaska territory on the subject of a boundary between Alaska and British Columbia. The extract is as follows: "The boundary line from the Portland Canal to Mount St. Elias should be speedily and definitely determined by a joint survey of the English and American governments. The matter I deem of first importance. Several of the highways to the interior of British Columbia begin within the limits of this district. I have been informed that rich placers have been discovered on the head-waters of other rivers, and unless the boundary is definitely settled, much trouble will ensue. No action has yet been taken in the matter."

ARIZONA.

MARICOPA COUNTY.

NATIONAL GOLD MINING COMPANY.—Articles of incorporation have been filed. The capital stock is fixed at $10,000,000, divided into 100,000 shares. Directors: N. C. Fassett, H. D. Whittemore, A. Fine, W. W. Foster, and T. N. Wand. The purpose is to work mines in the Cave Creek District.

PIMA COUNTY—QUIJOTOA DISTRICT.

Reports from the Peerless, Peer & Crocker Mining Company state that grading for the mill is nearly completed, and bids are received for contracting for stone work. A lime-kiln is going up near by, to furnish the lime. Contract has been let for furnishing brick delivered at the works for $16 a thousand. Excavating for pumping machinery at the shaft in the valley has begun. Pipe to convey water from the shaft to the mill has been shipped from New York. All work in erecting mill and pumping machinery will be pushed ahead as fast as material arrives.

PINAL COUNTY.

RAY COPPER COMPANY.—The secretary writes us officially as follows: The company started up its works on the 4th inst. The ore concentrates are very satisfactory. The jigs produced 64 per cent, and the Frue vanner 38 per cent copper. The mill has a capacity for reducing 60 tons a day, and the furnace 40 tons a day.

CALIFORNIA.

Mr. J. B. Randol, of San Francisco, has furnished us with the following statement of quicksilver production during March:

Mines.	1884. Flasks.	1885. Flasks.
Ætna	249	88
Napa Consolidated	152	145
Great Western	223	314
New Idria	36	80
Sulphur Bank	68	83
Redington	123	....
Great Eastern	2	33
Various	...	19
New Almaden	1,606	1,500
Total	2,459	2,262
Decrease in March, 1885		197

AMADOR COUNTY.

PLYMOUTH CONSOLIDATED.—We have received the following official letter: The tunnel is in 39 feet, running for the new level, No. 5, which will be 1410 feet below the surface. The ore will be struck about 100 feet from the shaft. The shaft is also sinking for still another level, No. 6. The company is sinking a new shaft on the parallel vein, known as the Woolford claim, about 600 feet east of the old workings. It is down 207 feet on a vein seven feet wide of good milling ore. The vein is gradually widening, and is a new feature. The drift from No. 2 level (1157 feet below the surface) has been run south 725 feet. It is believed that a body of ore will be struck in this drift within the next 500 feet. The main workings look about as usual. Every thing is running in good order.

MONO COUNTY.

MAY LUNDY.—The mill at Mill Creek has started up on tailings. There is quite a supply to be worked.

BODIE DISTRICT.

BODIE CONSOLIDATED.—At the mill, 160 tons of ore were crushed during the week ended April 4th. The bullion from this will be shipped with the product of next week's run. At the mine, the men were employed in getting out ore.

NEW STANDARD.—The following official report, prepared for the benefit of the creditors and miners interested in the affairs of this mine, shows that from the ore on hand January 31st, and from that extracted during February and March, bullion has been received netting $7600. The disbursements during the same period amounted to $8081.03. Overdraft, $481.03.

PLACER COUNTY.

WESKIE.—Charles Hoffman, mining engineer, has taken charge of this mine, the sale of which to a French syndicate was mentioned in our last issue.

SIERRA COUNTY.

MARGUERITE.—The mine is pumping out, and it is thought that the work of raising ore will begin in about three months.

PHŒNIX.—Work will be resumed soon.

SIERRA BUTTE.—Forty stamps are crushing ore at present, and four more batteries of five stamps each are in course of construction. The prospects of the mine are good.

CANADA.

PROVINCE OF NEW BRUNSWICK.

The Brunswick Antimony Company gave shareholders whose stock was sold for non-payment of the $1 assessment on March 31st the privilege of redeeming it at $1 a share until April 15th.

PROVINCE OF NOVA SCOTIA.

HALL-ANDERSON.—We have received the following letter from the secretary: President Davidson, who has been at the mine for past six weeks looking into the development of mine and the erection of new machinery, writes, under date of April 7th, that the new steam-hoisting works on the Orion lead started up on the 7th inst., working to perfection, the vein showing well and opened for 300 feet at depth of 80 feet, averaging 3 feet wide, the pay-streak being about 2 feet wide. On the 9th, he wires that the most important strike ever known in that district was made on that day by the company on a cross-cut at a depth of 70 feet, north from the Island lode 40 feet; a lead was cut (which was believed to exist there) 3½ feet wide of solid quartz, showing free gold throughout. The value of this discovery can only be ascertained by developing the lead, which will be done at once. The company has only a ten-stamp mill at present, but intends increasing to 20 stamps immediately, and later on to 40 stamps, as the ore is there to supply even a greater number of stamps. The ore is of low grade, running from $10 to $25 a ton.

OXFORD.—A dispatch from the superintendent, dated April 13th, says that the plates will probably be in place and running on the 13th. Every available space is now filled with ore. We were obliged to stop mining until the mill was ready. Meantime, we have sunk shafts Nos. 12 and 13 on Coleman lead, each 12 feet deeper, showing vein 2 feet wide and increasing with depth both in quality and width. As soon as the snow disappears, it is the intention to open new leads that are known to be on the property.

NEWFOUNDLAND.

A statement just issued by the St. John's Chamber of Commerce for the year ended July 31st, 1884, show that 9536 tons of copper ore and 133 tons of copper regulus were exported.

Owing to the unprecedentedly low price of copper, all mining operations at the Betts Cove Mining District have been indefinitely suspended. These mines were formerly owned by a Boston and New York syndicate. The output of ore within a few years has been over $6,000,000.

COLORADO.

CHAFFEE COUNTY.

MONARCH.—Preparations are making by the company to work a group of seven claims in the immediate vicinity of the Madonna.

CLEAR CREEK COUNTY.

A company has been organized to build a concentrating mill at Montezuma.

The Georgetown Public Ore Market handled 312 tons

of ore during March, the assay value of which was $37,245. Hall's mill handled 300 tons, the average value of which was $175 per ton; total value, $52,000.

The grade of the ore for the last month was much higher than for some time back. Taking the amount of ore shipped to Golden and other points directly, with that treated at the mills here, the footing up will be about $100,000 for the month.

CUSTER COUNTY.

BULL-DOMINGO.—Mr. William M. Lent, who some time ago purchased the company's property, both real and personal, has extended to stockholders the privilege of joining him in this purchase in proportion to their interests. He states further that he has possession of the personal property and for the realty he holds a certificate of sale from the sheriff, but can not have actual possession until six months after date of sale. The property in the mean time should be cared for, and this requires money. The stockholders who are already interested are willing to advance the money, not only for the care of the property, but also to do the work of sinking the shaft and opening stations at every 100 feet until a depth of 750 or 850 feet is reached. The action has been prompted by the indications at the 450-foot level and the improvement at the 550-foot level, which bids more than fair to have at the lowest depth, 850 feet, which will give a good property, if managed in a business-like manner. This offer will be open until April 25th.

ELBERT COUNTY.

OSO.—This company is preparing to work the sands of Cherry Creek, near Elizabeth, for gold. Placer mining continues there steadily.

HINSDALE COUNTY.

KAYSER VS. BELLE OF THE WEST.—The court has rendered its decision in favor of the defendants in the Kayser *vs.* the Belle of the West mine, involving the ownership of one half of the mine.

LAKE COUNTY.

The Leadville *Herald* reports the following: The Oro mill, with twenty-five stamps; the First National mill, with ten stamps; the Seven Thirty mill, with five stamps; and the Lilian mill, with twenty stamps, making sixty stamps in all, have begun operations on gold ores from the mines of Printer Boy Hill.

ADLAIDE.—The entire property is worked under the lease system. The company receives royalties ranging from twenty to forty per cent of the smelter returns, according to the value of the ore.

ANTIOCH.—The mine shows a vein of auriferous quartz fifty feet in width, and the east wall has not yet been disclosed. Not all of this mineral will pay to haul to town and treat at present, but will unquestionably pay well in the near future, while a large portion of it pays well even by the present expensive method of operations.

BRITTENSTEIN CONSOLIDATED.—This company has been organized under the laws of Missouri, with a capital stock of $100,000. The incorporators are Lewis C. Wilson, Henry M. Noel, William Fair, Lewis M. Fair, and Robert Rankin. The principal office will be in St. Louis. Operations will be carried on in Lake County, and L. N. Buck, of Leadville, will be the resident agent.

COLONEL SELLERS.—During March, there were shipped over 200 tons of carbonate ore of good grade, and more than three times as much sulphide ore.

CROWN POINT.—During the past month, the mine has yielded considerable fine ore. The profits of the mine above smelting charges, pay rolls, and all other expenses amounted to $43,587.

HUMBOLDT.—It is probable that this company, controlling a large portion of the southwest portion of Carbonate Hill, will decide to expend the money necessary to explore the property.

IRON SILVER.—Mr. W. H. Stevens will visit the mines this month. The future working operations will then be decided. The McCuen shaft is producing considerable high-grade ore, while the lessees on other portions of the company's property are taking out fair quantities of ore.

LEGAL TENDER.—The annual meeting of the stockholders was held at Leadville, April 7th. The reports showed that but little work had been done during the past year, but that the future held out some promising prospects. The following board of directors was selected: George O. Keeler, C. C. Kellogg, Solomon Rice, Charles Limberg, Frederick C. Morse, S. Mills, E. C. Tibbetts, and George W. Skinner.

MAID OF ERIN.—The development of the property continues with satisfactory disclosures, especially in the northern workings. The mineral body in this portion of the property consists of very clean and desirable smelting ore, and has a thickness of from four to twelve feet. The mine is now in a condition to produce fifty tons of smelting ore a day.

MORNING AND EVENING STAR.—Mr. H. S. Dickerman, the companies' financial agent at Leadville, resigned his position on the 15th inst.

NEW PITTSBURG.—The president informs us that a new body of ore has been struck, quite different from any thing heretofore found. It is a sulphide, and indications are favorable for a large body of good grade ore. As far as opened, it is 12 feet wide, and assays from 50 to 100 ounces silver. The ore is galena, with a certain amount of blende, somewhat similar to the ore found in the Moyer shaft of the Iron Silver mine.

SMALL HOPES.—The net product of this group of mines for the month of March will exceed $80,000.

ST. LOUIS.—The mine is draining. It is thought that some rich ore will be found in the lower workings.

TWIN LAKES CONSOLIDATED PLACER MINING COMPANY.—The officers elected at the annual meeting, held at Leadville, April 7th, are Messrs. B. P. Plumb, President; Dr. F. F. d'Avignon, Vice-President and Treasurer; and S. D. Walling, Secretary. The property is bonded to the Twin Lakes Hydraulic Gold Mining syndicate, an English corporation, which will work the property. The same syndicate also owns the Cash Creek placer, adjoining the bonded property, and which will be worked very extensively. Mr. Van Wagenen, who managed the affairs of the syndicate last year, has retired, and has been succeeded by Capt. Charles Harvey, who has just arrived from England.

PARK COUNTY.

WOODMOSS OF ALSTON.—This company has been organized, with a capital stock of $500,000, by Alfred H. Wilson, Randall W. Wilson, and George C. Bates. Operations will be carried on in Park County, and the principal business office will be in Alma.

PITKIN COUNTY.

Aspen mines are attracting general attention. The Emma and Aspen (lying next each other near the town), the Smuggler, Vallejo, Spar, and Durant are the prominent mines. The Duxie is a recent strike, promising well. Besides these, there are numberless prospect-holes under lease, bonded, conducted by companies and individuals, the sinking of which will be vigorously pushed this summer. The need of the town is a railroad, and the Burlington, the Denver & Rio Grande, and the Denver & South Park are all believed to be looking toward it. A smelter has been erected by J. B. Wheeler & Co., but its capacity is fully taxed in smelting the ore taken from the Emma and Aspen mines, in which members of the firm are interested. Mr. J. B. Wheleer is a member of the firm of R. H. Macy & Co., of New York City. His smelter is forced, it is said, to bring in nearly a ton of flux for every ton of ore smelted; and it is this need of flux that makes the want of a railroad so keenly felt; for the necessary minerals are not found about Aspen, and the ore can only be treated at places like Pueblo, Denver, and Salt Lake, to the smelters at which points flux is brought from no great distance. Freight teams charge $25 a ton for hauling ore to Granite, where connection is made with the Denver & Rio Grande, and this expense, added to that of taking out the ore and packing it on burros down the hills to the town, causes shipments to be made of no mineral yielding less than $300 to the ton.

SCHILLER LEASING COMPANY.—The object of the company, which has just been organized, is the purchase, operation, and leasing of mines. The capital stock is $25,000. The incorporators are George W. Trimble, F. H. Officer, A. Chanute, John M. Maxwell, A. V. Hunter, and G. P. Holden. The principal office of the company will be in Leadville, and the principal business will be done in Pitkin County.

PUEBLO COUNTY.

NEW ENGLAND SMELTING COMPANY.—This company has broken ground preparatory to erecting an addition to its works at Pueblo in the shape of roasters. It is stated that the company's works will soon be in full operation.

SAN JUAN COUNTY.

The ore-shipments from Silverton for March amounted to 590 tons. During the same time, 310 tons of iron ore were shipped to Durango.

SUMMIT COUNTY.

DOUBLE AND TREBLE DISCOVERY EXTENSION.—A third interest in this mine, in the Gold Run Basin, has been sold for $10,000.

ROBINSON CONSOLIDATED.—The lessees are doing well, and about two car-loads of ore are sent out daily. The bulk of the ore comes from the Felicia Grace ore-chute after it enters the Robinson territory. A fair product is also obtained from the old Robinson workings.

ORNER TUNNEL.—On Jack Mountain, the principal work of interest in progress is the Orner tunnel, which was started last December to cut the Queen of the West and Mayflower mines. The tunnel is in over 400 feet, and lacks about 200 feet of being completed. It will connect with the vein at the junction of the two properties, and 250 feet below any of the present workings.

DAKOTA.

LAWRENCE COUNTY.

FATHER DE SMET.—The report for the week ended April 8th shows ore extracted from the first, second, and third levels, 2025 tons. Ore milled, 2025 tons, East cross-cut, fourth level, advanced 12 feet at $8 a foot. Total length, 44 feet.

GEORGIA.

LUMPKIN COUNTY.

Work at the various mines goes on satisfactorily. The mills at the Ivey, Bast, Chicago, and Georgia will start up by the first of May. At the Columbia, ten stamps have been added to the mill.

IDAHO.

COPPER KING.—Work on the long tunnel in the Big Copper mine of this group has gone on all winter, and the header is in over 300 feet. It has cut several stringers of good ore. The owners propose to work it vigorously. The smelting-furnaces operated with the mines will soon resume operations.

QUEEN OF THE HILLS.—It is reported that a contract has been made with the Grant Works, Denver, by which that concern takes the total output for 1885, the ore and concentrates to be shipped by the Union Pacific Railroad.

MEXICO.

The discovery of rich gold-fields in the Santa Rosa Mountains, about one hundred miles west from Santa Rosa, is reported.

The Mexican *Financier* reports the following: In the mine of Santa Gertrudis, a lateral cut of 230 yards has been made, connecting with the San Guillermo shaft. This will render the extraction of the ore much easier.

Mr. H. O. Reinhardt, the construction engineer of the North Mexican Silver Mining Company, writes from Chihuahua to the company in London that he has purposely delayed preparing the plans until the location of the site should be fully agreed upon and the ground awarded by the authorities. The mill will be erected by August 1st, certainly.

The American company working the Leonora mine in the Jalpa District, Zacatecas, is beginning to extract ore of a tolerably good grade, which will cover its expenses. Another company is endeavoring to buy other mines in the same district.

On account of the bonanza in the Dificultad mine, in Pachuca, the company has ordered that all the miners and employés shall undergo inspection on leaving the mine. This measure has given offense to the English miners especially, as well as to a number of the Mexicans.

A number of mines have just been discovered in Santa Catarina, near San José del Cabo, Lower California. Some of the ore pays upward of $300 a ton. The operation of the mines ought to be easy, as the surrounding country is fertile and favorable for agriculture and grazing, materials for reduction are abundant and cheap, and San José, being a seaport, offers facilities for the introduction of machinery and merchandise, as well as for the exportation of native products.

Señor Manriquez, who is in charge of the Arévalo mine, in the Mineral del Chico, Hidalgo, has introduced an improvement in the patio system of reduction, removing from the amalgam by means of magnetism the iron left from the Chilian mills, which interferes with and delays the reduction.

MICHIGAN.

COPPER MINES.

BELT.—Reports state that these mines will be worked on an extensive scale this year, beginning

with the first of June next. The operating company is composed of English capitalists, who recently raised a large amount of money to start the work there on a comprehensive plan.

Peninsula.—A proposition has been made to the creditors of this copper mine to take one half the stock, control the company, and unite with other stockholders in operating.

Tamarack.—The shaft is down over 2100 feet, and it is expected that the Calumet & Hecla lode will be reached by July. The assessment of $3 a share was due for payment April 11th. It will, if paid in full, yield $120,000, which will pay for the company's investment in the railroad, build its rock-house, to be needed this fall, and meet other necessary expenditures. The company, it is said, has money enough without the assessment to complete the shaft.

GOLD MINES.

Ropes.—Mr. H. C. Southworth will succeed Mr. Crow as superintendent of this mine.

MINNESOTA.

Minnesota Iron Company.—Reports from Duluth state that this company has contracted with Wilson's line of vessels for transportation of its ore output from Two Harbors to lower lake ports the coming season. The company expects to ship at the rate of about 50,000 tons a month from the opening to the close of navigation. The mines are said to be in fair shape for production, but the output will be limited to about the quantity stated per month, owing to the unsatisfactory prices ruling.

MONTANA.

BEAVERHEAD COUNTY.

Hecla Consolidated.—The official report for March shows that the production for the month has been 50,740·41 ounces of silver; 18·38 ounces of gold; 341,539 pounds of lead; and 12,800 pounds of copper.

JEFFERSON COUNTY.

Arnault.—A three-fourths interest in this mine, near Wickes, has been sold for $75,000, it is said, to William G. Stewart, John A. Parvin, and Henry Milch, of New York. Mr. Stewart is now in New York City for the purpose of purchasing machinery, which will be shipped as soon as possible. Mr. Simon Bommersheimer will be in charge at the mine.

SILVER BOW COUNTY.

Alice.—The work of sinking the main three-compartment shaft in the Alice mine has been continued until now it is about 25 feet below the 700-foot level. Drifting on the various levels goes on rapidly. The average product of ore from all the mines operated by this company is 105 tons, dry weight. It is the intention to put a pair of Bowers's patent concave Cornish rolls in the mill this spring.

Auraria.—The shaft is down 128 feet. Ore taken from the drift at present worked gives the following assays: First-class, silver, 58 ounces; gold, $2.80; second-class, silver, 41 ounces; gold, $1.75.

Chief Joseph.—The company is much troubled with water, but the pump which has been put in place will prove sufficient to overcome this.

Lexington.—The air-compressors will be started up in a few days, when sinking will be resumed to the 800-foot level. Drifting and cross-cutting are proceeding vigorously. The output of ore from this mine averages about sixty tons a day. At the mill, fifty stamps are run on ore from the company's mine. Work has been resumed on custom ores, in order to assist in the better reduction of the company's ores, which are of a a base quality.

Montana Copper Company.—The smelter belonging to this company continues to run in full blast on ores from its own mines.

Mountain View.—The shaft is down 638 feet. Two ore-dumps have been established at which different grades of ore are deposited. The best ore, running from 40 per cent copper and upward, is sorted and shipped to Europe.

Parrot.—The company is now only running one reverberatory furnace and making a general clean-up

NEVADA.

EUREKA COUNTY.

Eureka Consolidated.—The mine continues to look well and yield favorably. The work on the tramway is going on as rapidly as possible. The machinery for the furnaces has arrived from San Francisco. It is thought that operations will begin about the end of the month.

Richmond Consolidated.—In the United States Supreme Court, April 14th, the suit of the Richmond Mining Company, plaintiff in error, against E. H. Rose *et al.*, came up, and argument was concluded.

LINCOLN COUNTY.

The Smelting Company engaged in leaching the tailings at Bullionville is doing very well. It is working 12-ounce raw tailings up to 30 per cent, at a cost of $1.21 a ton. When the tailings are roasted, which will be as soon as the company can erect a large Stetefeldt furnace, Mr. Russell says that he will work them up to 80 per cent, putting through 175 tons daily, at a cost not to exceed $4.50 a ton. There are about $100,000 tons of tailings on hand.

STOREY COUNTY—COMSTOCK LODE.

The mill-owners in the cañon are trying to make terms with the Water Company to turn its waste water into Seven-Mile Cañon at the Sierra Nevada mine, instead of turning it down Gold Cañon, as heretofore. If this arrangement is entered into, all of the mills in Six-Mile Cañon below its junction with Seven-Mile Cañon can be run to their full capacity all summer.

Best & Belcher.—The machinery at the Belcher air-shaft in Gold Hill is overhauling and getting into order. This shaft was formerly used for furnishing air to the men working on the lower levels of the mine. It has been shut down for several years, and the repairs now going on point to a resumption of work below the present ore-producing belt.

Chollar.—Work was resumed in the face of west cross-drift No. 1 on the 3000 level April 9th. This drift will cut the vein at the extreme south line of the Hale & Norcross. West cross-cut No. 2 from the south lateral drift, begun at a point 100 feet south of No. 1, is still cutting quartz, but has some distance to run before it is expected to intersect the continuation of the vein in the Norcross, the course of which is said to be nearly south-southwest.

Hale & Norcross.—Operations continue, but no important developments have as yet been made. None of the cross-cuts on the 3000 level will be pushed into the vein until the arrival of officials and other parties from San Francisco, who were expected the end of last week.

Sierra Nevada.—The repairs to the upper portion of the shaft have been completed, and they are now engaged in cutting out a station on the 520 level, preparatory to starting a north and south lateral drift. The progress of operations on this level will attract more than ordinary attention from the fact that the ground at that point, except the portion passed through in sinking the main shaft, has heretofore remained totally unexplored. After the lateral drift has been completed, cross-drifts to the west will be run in search of the auriferous deposits known to exist in Cedar Hill.

WHITE PINE COUNTY.

All work in the Eberhardt and Aurora tunnel at Hamilton was suspended April 4th for an indefinite period.

Argus.—This group of mines is looking splendid, and the company undoubtedly will, at an early day, be more than compensated for the prospecting-work it has done. The large bodies of ore the company has thus far uncovered are of a superior quality. The two mills work continuously.

NEW MEXICO.

GRANT COUNTY.

The old bed of tailings that has been accumulating at the Bremen mill at Silver City for many years, has been sold for $12,000 in cash. It is estimated that there are of these tailings from 8000 to 10,000 tons, and that they will run from $12 to $16 a ton. They will be treated at the Flagler reduction-works. Besides these tailings, the company has on hand between 3000 and 4000 tons more.

Fleming.—This mill, which was leased a short time ago, with an option to purchase, by Col. H. H. Carpenter, superintendent of the Flagler reduction-works, is rapidly changing into lixiviation-works, the additional improvement costing something over $25,000. New machinery is going in, and the structure is undergoing an entire change. All the new machinery added is of the very latest improvement, and is designed especially for the lixiviation process. The crushing capacity of the works, to begin with, will be only 50 tons a day, while the vat capacity is about 100 tons a day. This difference in the capacity of the vat and crushers was made because the company has on hand enough tailings that do not need crushing to keep the works going for nearly a year without buying any ore. But notwithstanding this fact, it will buy all the ore brought there as soon as the works are completed and in running order.

Old Man.—Rich ore has been taken from the recent strike made in the west tunnel. The body shows no sign of diminishing, but seems to increase in extent.

NORTH CAROLINA.

CLEVELAND COUNTY.

Messrs. W. F. R. Bell, of the King's Mountain High School; Dr. C. W. Dabney, State Chemist; Judge A. C. Avery, of Morganton, and Robert Claywell, own the tin mine discovered several months ago at King's Mountain. They have bought from A. F. Weir the land upon which the cassiterite veins are found, paying him $3000 in cash. A party of Cornwall, England, has offered, it is said, a large sum for the mine, and the proposition is under consideration.

RANDOLPH COUNTY.

Hoover Mill Gold Mining Company, Limited.—Mr. William Frechville, the manager, has kindly furnished us with the following information: The company is working at two points about a quarter of a mile distant; at the one point through the Briols shaft, about 230 feet deep; and at the other through the Hawkins shaft, about 140 feet deep. The Briols shaft has been recently equipped with an 8-inch Cornish pump, and 7 by 10 double hoisting-engine. Both parts of the mine are looking well in the bottom, and have considerable reserves of ore opened out. It is purposed soon to begin sinking both the Briols and Hawkins shafts deeper. The mill of 20 stamps has been running steadily for about two years. Of late, the mine being more extensively opened out, there has been an improvement in the grade of the ore milled. The mines are now worked at a fair profit, and, judging by the appearance in the bottom, there is prospect of an improvement. The company, which is a London one, was organized with 120,000 shares of £1 each. In September last, it was reorganized, the capital being reduced one half, and 2s. 6d. a share unspent capital being returned.

OREGON.

Considerable interest is springing up in regard to mines in this State, and capitalists are looking to Portland as the natural point for the erection of reduction-works, samplers, etc.

PENNSYLVANIA.

BERKS AND LEHIGH COUNTIES.

A number of iron ore mines in these counties, along the East Pennsylvania Railroad from Bower's to Allentown, which were lying idle during the winter, are preparing to resume operations.

UTAH.

JUAB COUNTY.

Beck & Bullion.—The shipments average seventy-five tons a day, which would be greatly increased were it not that a large quantity is restrained, pending the suit between the owners and the Eureka Company, which will probably not be decided until the September term of court.

SALT LAKE COUNTY.

Flagstaff Silver Mining Company, Limited.—Meetings of the creditors and shareholders of this company, now in liquidation, were recently held in London, at which the agreement for transferring the property and assets of the company to a new company was approved. The new company is to have a share capital of £160,000, in £1 shares, credited with 17s. 6d. paid; new 5 per cent debentures are to be issued for the debentures and arrears of interest thereon in the old company, and second mortgage debentures are to be issued to those creditors who were entitled to them in the old company. The debts of the concern amount to about £14,000 or £15,000, including the debentures. Professor Vincent says there are 20,000 tons of low-grade ore ready to be raised when there is a market for it.

SUMMIT COUNTY.

Crescent.—Negotiations for the sale of this mine at a high figure are pending in London, England.

WASHINGTON COUNTY—SILVER REEF.

Stormont.—Official reports state that the sixth level has given some encouraging assays during the past few weeks, but not sufficient to warrant any definite estimates as to future output. The last monthly production shows an increase over the preceding few months.

WYOMING.

The Union Pacific Railroad has begun running trains out to the soda lakes near Laramie. The lake upon which work has begun has been drained as nearly dry

as possible, but has about an inch of water upon its surface all the time, coming from the surface drainage. The ditch has worked admirably, and there is a steady flow through it to the lower lake. The experiment of taking out soda has begun.

The granite quarries near Laramie are attracting attention, and there is every indication that a company will be organized at an early day to work them. Specimens have been sent to the marble workers at Joliet, Ill., to be tested. The Union Pacific Railroad Company guarantees low rates of freight, and will readily aid in building up this industry. All persons interested should correspond with the Secretary of the Wyoming Central Land Improvement Company.

TOM SUN.—This property, in the Seminoe Mountain District, has been purchased by Pennsylvania capitalists. The property has been known for some years as showing indications of free-milling gold ore, but it has, unfortunately, been in the hands of men who did not know how to show its value to capitalists, and who did not have the money to work it themselves. The property embraces two mines, and is 3000 feet long by 600 feet in width. The purchasers are gentlemen of Wilkes-Barre, Pa., of whom the principal is Irving A. Stearns, a mining engineer. The transaction was a direct one, the $30,000 being paid down. Mr. Stearns has ordered a contract to be let for clearing out the old drifts and tunnels, and this work has commenced. Development will be pushed as rapidly as possible. Near the property just sold are a half-dozen other gold mines. Farther west, are silver mines, also of considerable promise. The location for a mining town is good. Coal in a thirteen-foot vein is within two and a half miles. The Platte River is only eleven miles away. Sand Creek is only ten miles away, and plenty of water in the mountains.

FINANCIAL.

METALS.

NEW YORK, Friday Evening, April 17.

Copper.— The copper market has justified our report of last week in advancing. Lake sold to-day at 10·95c., and is held at 11c. Other brands may be quoted 10½@10¾c. Furnace material is getting scarce for the domestic market, being largely contracted for six months ahead to be delivered to Europe.

Our reports this week announce the closing of the Betts Cove mine, in Newfoundland, on account of the low price of copper.

The price of Chili Bars has again declined. On the 11th instant, they were quoted £44 10s. On the 13th, they went to £44 2s. 6d. ; and on the 14th, to £44 —the lowest figure on record. They have since stood, on the 15th, £44 2s. 6d., and yesterday again touched £44. To-day, they are quoted £44 7s. 6d., and at the close £44 10s. Best Selected has varied from £50 to £49 10s. nominal. Our exports from New York of copper for the week since our last issue amount to 807,773 pounds, and of copper matte to 2,762,195 pounds.

Tin.—There has been a speculative flurry in tin, and prices have advanced from 17·30c. last week to 17·85c. to-day, when a sale of 10 tons at this figure was made on the Metal Exchange. There has been no unusual demand for consumption, and the price is purely artificial.

London cables quote from £77 5s. on the 14th to £77 15s. yesterday, and £78 17s. 6d. to-day (17th) for spot, and £79 12s. 6d. three months. This sudden rise is said to be due to speculation solely. The imports of tin at this port during the week were 190,533 pounds of tin and 16,215 boxes of tin plates.

Lead.—Sales of three or four hundred tons during the week have been reported. The price obtained for Common was 3·60c. and Refined 3⅝c. We quote to-day 3·65c. as the asking price, 3·60c. bid, and very little doing.

Cables during the week quoted Soft Spanish £10 10s. @£10 7s. 6d.

Messrs. John Wahl & Co., of St. Louis, telegraph us as follows to-day :

There is nothing new to report. Business continues very dull, with but little prospect of any immediate improvement. Consumers continue to buy from hand to mouth only. The event of the week has been the sale of 100 tons of Common lead at 3·37½c. Desilverized is generally held at 3·50c. Four hundred tons sold at 3·32½c.

Spelter.—There is very little doing in this metal, and we continue to quote 4·25@4·50c. according to brand for the domestic article, and 4¾c. nominal for foreign. Bertha Refined is quoted at 7¾@8c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, April 17.

American Pig.—This market shows no change from the monotonous dullness of many months past, a fair demand for immediate consumption, but no desire to stock, and a total absence of any speculative feeling. We continue to quote good Lehigh and similar brands at $16@$16.50 for Gray Forge ; $17@$17.50 for No. 2 X ; and $18@$18.50 for No. 1 X, with from 50c. to $1 off these prices for irons not so well known or liked, and 50c., in some cases, above these figures for special brands.

These are fair living prices for economically managed works, and there is a sufficient number of these able and willing to supply the market at these figures to put out of the question any considerable advance for an indefinite time in the future.

If there be any furnaces continuing to run at a loss or without profit at present prices, hoping for an improvement in price, their owners need nurse that hope no longer. Every thing points to but little if any improvement in prices, and the cost account will again have to be overhauled to see where further economies can be made. Is it to be in fuel, or ore, or both ?

Steel Rails.—These continue to be sold at prices that leave little profit on the manufacture. They are quoted at $27@$28 at the Eastern mills, but we hear of a sale of 4000 tons sold and delivered at or near Chicago at, it is said, $28.50 per ton. If this should come from an Eastern mill, it would bring the mill price down to a figure considerably below any thing we have recently been quoting.

The Canadian Pacific Railroad has purchased several lots, aggregating 12,500 tons, from the Lackawanna Coal and Iron Company, at, it is said, $26 a ton. These rails go up to Prescott, Ont., and thence on to the line of the Canadian Pacific Railroad.

There is an unconfirmed rumor that we have not been able to trace to its origin, that two lots of steel rails, one of 10,000 tons and one of 20,000 tons, furnished by an Eastern mill on a five-year guarantee, have been rejected after a trial of about two years, and the company has been requested to replace them with better quality. There is little question but that the strong competition for orders has led some manufacturers to seek economy in using inferior material. This temporary relief bring its drawbacks in time, and it is only the mill that can produce both economically and of good quality that can survive.

Philadelphia. April 17.

[From our Special Correspondent.]

Pig-Iron.—The makers and holders of some inferior irons have been busying themselves more than usual within the past few days to get rid of some stocks on hand, as well as to gather some orders that will see them through the summer. It has been necessary to take prices for such orders that do not leave much to makers, but the backwardness of the purchaser has made this course an imperative one. The nominal quotations are as they have been, namely, $18 for Standard No. 1, and $17 for No. 2, with a good deal of Forge in the aggregate selling at prices all the way from $14.50 to $16. The commoner brands have had the best show. Manufacturers are anxious to do with as cheap iron as will answer. Some of the makers of better brands have been trying to realize better prices, but buyers do not propose to pay more, but rather less. The ore market has been quiet. There have been several arrivals of foreign material, including manganese, fire-brick, spiegeleisen, Bessemer pig, and iron ore, the last arrival being 1853 tons. It is a little too soon in the season for heavy arrivals, and there is still some uncertainty as to their extent, owing to the uncertainty as to freight rates. Bessemer is offered at $19.25, but buyers are not to be found at that figure. Spiegeleisen is offered, but there is not much inquiry. Scotch pig is of very slow sale.

Muck-Bars.—The usual quotations in Muck-Bars are $26.50@$27.50, with very little business.

Steel Slabs.—A large amount of business is done in Steel Slabs, and Western makers are taking some orders on very favorable terms, guaranteeing product.

Merchant Iron.—Small sales of Merchant iron continue to be made at $1.50@$1.55 for Common ; $1.60 for Medium ; $1.70 for Refined ; and $1.80 in small lots. There are no large orders on the market.

Nails.—Nails continue fairly active at $2.15@$2.20 nominally, with shadings to be had for large orders. Factories are doing well ; consumption is heavy, and prospects are bright.

Sheet-Iron.—The mills are doing a good business in sheet-iron, getting better prices than heretofore for small lots. Card rates are unchanged.

Wrought Pipe.—There are several inquiries for wrought-iron pipe, and a steady volume of business is coming in, though not enough to crowd capacity of the mills.

Plate and Tank-Iron.—Plate iron is selling at 2c. ; Shell is nominally 2½c. But little flange or fire-box has been sold. There are indications that the plate mills will have more business from this on.

Structural Iron.—Angles are 2c. ; Tees, 2½c. ; Beams and Channels, 3c. Large orders for future delivery could be shaded perhaps a little. A good deal more business has come to hand within a week or ten days, and the mills are turning out more material and have more orders ahead than for some time past. There is nothing like a rush at all, but there is plenty of capacity to be called into requisition if demand warranted.

Steel Rails.—Two or three of our Pennsylvania mills have a good deal of slab steel contracted for, and have gathered up orders for summer delivery at it is thought something less than $27 for large lots and $27.50 for small.

Old Rails.—Quotations for Old Rails are $17.50@$18 here, and $18.50@$19 at interior points. American Rails are held at $18@$18.50. Steel rails are offered at $15@$15.50.

Scrap.—No. 1 Wrought Scrap is selling at $18.50 for Selected ; No. 2, $14@$14.50 ; Fish-Plates, $22@$23 ; Steel Scrap, $18@$20 ; Machinery Scrap, $13@$15, according to quality.

Pittsburg. April 17.

The Metal Exchange of New York has received the following telegram this evening:

Market extremely dull, and shows no improvement in either prices or demand. Prices very irregular. Outsiders are offering metal at low figures. This interferes with regular dealers. The only sales made are for immediate use. The following are the sales for the week :

200 tons	Gray Forge Lake ore		$15.00	4 mos.
100 "	Bessemer Native "		18.00	"
100 "	Gray Forge Lake "		14.50	cash.
100 "	" " " "		15.25	"
50 "	" " extra "		15.50	"
200 "	Gray Forge Native ore		15.50	4 mos.
100 "	" " " "		14.50	cash.
100 "	Foundry No 2 Native ore		16.50	4 mos.
50 "	Gray Forge Native ore		15.25	"
50 "	Foundry No. 2 " "		16.00	"
50 "	Gray Forge " "		16.25	"
50 "	Silvery Native extra ore		18.50	"

COAL TRADE REVIEW.

NEW YORK, Friday Evening, April 17.

Anthracite.

The production of anthracite coal for the month of March is given in the statistics of the companies following :

Mr. John H. Jones, official accountant, publishes the following statement of the anthracite coal tonnage for the month of March, 1885, compared with the same period last year. This statement includes the entire production of anthracite coal, excepting that consumed by employés, and for steam and heating purposes about the mines :

COMPANIES.	March, 1885.	March, 1884.	Difference.	
Phila. & Reading RR...	688,088	610,689	I.	77,399
Lehigh Valley RR.....	361,276	381,702	D.	20,426
Del., Lack. & West. RR.	365,971	342,172	I.	23,799
Del. & Hud. Canal Co..	190,507	212,620	D.	22,113
Pennsylvania RR.....	277,422	225,689	I.	51,733
Pennsylvania Coal Co.	93,315	78,760	I.	14,555
N. York, L. E. & W. RR.	49,211	29,830	I.	19,381
Total	2,025,790	1,881,463	I.	144,327

COMPANIES.	For Year 1885.	For Year 1884.	Difference.	
Phila. & Reading RR...	1,945,510	1,957,441	D.	11,931
Lehigh Valley RR.....	981,764	1,151,254	D.	169,490
Del., Lack. & West. RR.	914,292	994,794	D.	80,502
Del. & Hud. Canal Co..	523,453	608,445	D.	84,992
Pennsylvania RR	706,286	641,444	I.	64,842
Pennsylvania Coal Co..	248,692	246,645	I.	2,047
N. York, L.E. & W. RR.	115,303	73,698	I.	41,605
Total..... ..	5,435,300	5,673,721	D.	238,421

The stock of coal on hand at tide-water shipping

points, March 31st, 1885, was 431,424 tons; on February 28th, 1885, 665,565 tons; decrease, 234,141 tons.

Statement showing general distribution of entire production of anthracite coal, year ended December 31st, 1884; contributed by the Philadelphia & Reading Coal and Iron Company:

	Tons.
To Pennsylvania, New York, and New Jersey	20,656,297
New England States	5,112,825
Western United States	2,736,099
Southern States, including Delaware, Maryland, and the District of Columbia	1,336,070
Pacific Coast	8,839
Dominion of Canada	837,185
Foreign ports	30,978
Total	30,718,293

From this, it is seen that for the month the quantity produced was 144,327 tons more than in March, 1884, and our total production on the 1st of April was only 238,421 tons less than in the first quarter of last year.

The companies exceeded their allotment by 225,000 tons, and stocks at tide-water were reduced about as much more, so that the trade took from the company about half a million tons more than the allotment in the first quarter of the year.

Unfortunately, this cheerful condition is not permament. The demand, though still fair, has slacked up considerably, and there seems to be no desire on the part of dealers to lay in stocks at present.

The amount which each company was over its allotment on the first of this month is given in the following table:

	March.		Excess to
	Allot't.	Pro'd.	April 1st.
Philadelphia & Reading	699,300	688,048	+ 80,710
Lehigh Valley	352,800	361,276	+ 40,984
Delaware, L. & W.	288,900	365,971	+143,891
Delaware & H. Canal Co.	198,000	190,507	− 4,548
Pennsylvania Railroad	144,000	277,422	+322,285
Pennsylvania Coal	90,000	93,315	+ 8,692
Erie	27,000	49,211	+ 43,303
Total	1,800,000	2,025,730	+635,297

The companies in excess will probably equalize now that the pressure on the demand has ceased. The Pennsylvania Railroad keeps on its independent and profitable course unfettered by restriction. The Delaware & Hudson has kept close to its quota, and, as in its prices, has given *net figures*.

As regard prices, the most business-like and rational course is that followed by this company. All the other companies, though issuing circulars at figures about 15 cents above the *net* selling prices, have nevertheless sold all along at the discount, and being thus demoralized by "cutting," have not even stopped in all cases at the standard *net* prices.

We quote actual selling prices as follows, per gross ton, for Wilkes-Barre, Lackawana, Scranton, and Reading free-burning coals: Broken and Egg, $3.20@$3.35; Stove, $3.85@$4; Chestnut, $3.50@$3.65; Pea, $2@$2.40; Buckwheat, $1.80@$2; with a fair demand on all sizes, rather better on chestnut than on the other sizes.

We hear of shading of even the lowest of the above prices by ten cents a ton; and on the other hand, special coals are quoted at, and sometimes fetch, prices considerably above these.

Freights are very low to Boston, 75c. for 800 to 1000 ton vessels; 85 cents for small vessels. Philadelphia to Boston, $1.05; and Baltimore and Georgetown to Boston, $1.25.

It is even possible in some cases to shade these figures at present, but it is not improbable they may be advanced instead of lowered.

THE WESTERN TRADE.

The event of the week has been the meeting of the Western Anthracite Association. It brought quite a gathering of Western coal dealers and agents to this city. They came, for the most part, to learn the details of the new "plan" for the management of the Western business during the ensuing year.

The managers of the Western business are great on "plans," and each year they get up a new one, acknowledging—what the whole world knew—that all the old plans were frauds and failures. We are told that this last plan "is just too sweet for any thing," and is "warranted not to rip, tear, ravel, or run down at the heel." It was, as usual, adopted "unanimously," and as no one seems to understand just what it means, it possesses the double advantage of appearing wise and of being evaded with the least possible tension of conscience. Although, indeed, "combination" and "pool" "agreements" should only be taken in a Pickwickian sense, and be looked upon as a huge joke on the one April fool who may try to live up to them. The performances of the Western Anthracite Association are to be resumed on April 28th. In the mean time, there was an informal and amusing "understanding" that the companies would work on a percentage based on shipments of the past two years.

The fact is, the "Western business" is dreadfully "mixed" and demoralized, and it has been going from bad to worse for some time.

The companies, instead of selling their coal to responsible dealers, as formerly, have undertaken to distribute the coal through salaried agents or commission men, and these in turn sell through the numerous "little dealers," as they are termed—men with little or no means, and who necessarily make a heavy profit per ton on the small amount each can place.

These "commission deals" are carried out in many cases about as follows: The company furnishes the amount of coal the party thinks he can dispose of, *pays all expenses* and a commission of say 25 or 30 cents per ton on the *actual price obtained*, the company getting the net proceeds. The prices are elastic, and are sometimes so far from those of the "resolutions" and "plans" as to lose all resemblance.

The Western markets have been used as a dumping-ground by the companies, where the coal they can not sell in the East is slaughtered, and yet they go through with the farce of making quotations far above the actual prices.

At Chicago, anthracite is now selling at from $4.50 to $5 per net ton, while the price agreed upon by the Association is $6.45.

At Detroit, Toledo, Cleveland, Buffalo, Toronto, and other points, the cut on Association prices is also tremendous. Any one asking circular rates is looked upon as extremely "fresh." Making these "plans" and "agreements" may be an entertaining amusement, but it can scarcely be considered a harmless one when it produces such fruit as we find in the present condition of the Western market.

Bituminous.

The production of bituminous coal in Eastern fields is given in our statistical tables. This trade has not improved much under the "pool" treatment.

Vanderbilt coal is reported to have been offered this week, "weighed" at New Haven, for $2.90 per ton.

The New York & New Haven contract for 30,000 tons is said to have been given to J. C. Scott & Co., and 50,000 tons to the Pocahontas.

The Maine Central contract is said to have been taken by Berwind, White & Co. The National Steamship Line and New York Central contracts are still open.

There are rumors that the "pool farce" will be withdrawn before long and some other play substituted. It has not "drawn" as well as was expected.

Prices of bituminous coals may be quoted at $2.75@$3.25, f. o. b. New York; $2.40@$2.75 Philadelphia and Baltimore; $3@$3.50 Boston and Sound ports.

The United States Light-House Inspector advertises for tenders for the supply of coal for the current year.

Philadelphia. April 17.

[Special Correspondence.]

The low freights to the East, which have settled down to one dollar to Boston, have stimulated the demand, and orders for shipment are coming at a lively rate, decreasing the stock on hand, the daily receipts not being sufficient to meet pressing wants. On the other hand, the local trade is getting filled up, particularly with stove, which is scarce at tide. It is generally expected that the activity for shipments in May, added to larger receipts, will advance the freights by sailing-vessels, which are so low now that but few captains earn wages. A preliminary meeting was held yesterday by vessel-owners representing this section, New York, and the East, with the view of establishing a minimum rate and doing away with the heavy charge for unloading in Massachusetts by making the rate of freight free of discharge. The circular prices are well maintained on stove and all special coals, and selling prices nearer to them for the other sizes than in the earlier part of the month.

Buffalo. April 16.

[From our Special Correspondent.]

Local business is good in consequence of continued cold weather and a marked improvement in the demand for manufactures of all kinds. There is no doubt that the shipment of coal from Buffalo Westward will be large, as stocks are very much depleted.

It may be in the recollection of your readers that the property of the Union Steamboat Company, situated on Prime street and Buffalo River, was wanted in 1883 by the Delaware, Lackawanna & Western Company for dock and railroad purposes. The matter has been in litigation since that time. To ascertain the value of the property, a commission was appointed, and its award was made public last week, allowing $350,407.21 for the 300 feet (frontage) land and the buildings thereon, including the sum of $8000 to be paid for the lease of the tenant of one of the buildings. The attorney of the railroad company says, "The proceeding on which the decision was given were an appeal from a preliminary order on the ground advanced by the attorney of the steamboat company that a railroad company could not exercise the right of eminent domain as against the property of another common carrier. The decision validates the proceedings already had, and sustains the position of the railroad company, which went on with the proceedings as if no appeal had been made." It is expected that the steamboat company will appeal from the award.

Our friend, Mr. T. Guilford Smith, was to have lectured here on Coal on Tuesday last, but the genial merchant postponed its delivery until a week hence. He is now in New York, learning what the price of coal will be the coming season, so that he can talk understandingly on that important topic of household interest, and probably give his hearers a point or two.

The coal trade again rejoices, for the certificate of organization of the Buffalo Cremation Company was filed for record on Monday last. The first object of the corporation is "to incinerate the human dead, and preserve the calcined remains." How many tons of coal will be required annually for carrying out this object? Which will be the favorite fuel, hard or soft coal?

"When you are ready to make charters on coal to Chicago and Milwaukee at fifty cents," say the Buffalo shippers, "then we will see you." The vessel men answer back: "When you are ready to pay seventy-five cents, come and see us." Query: Are the days of compromise past? Down freights on grain have advanced ¼ cent.

The commissioners of the bituminous coal pool met on Tuesday last, at the office of Messrs. Bell, Lewis & Yates, in this city, and appointed Mr. James McFarlane, of Towanda, Pa., as arbitrator. This gentleman is well versed in the trade, and has served as an arbitrator for many years. He will have an office here and enter upon his duties at once. A scale of prices was adopted, but they were not made public.

Provided favorable weather prevails during the next four weeks, the Erie and other canals of the State will open on or about May 15th. The money required to place the canals in good shape is comparatively large; of course, the work done will be in accord with the appropriation. If it is small, only work that is absolutely necessary will be done; and if large, there are improvements enough wanted to use up every dollar. A serious break at Eagle Harbor was reported a few days since.

The ice is all out of Buffalo River; tugs are moving vessels, and our ship-builders and repairers are busy getting the sail and steam craft in trim for the season's business. Out in the lake, the ice remains thick and solid; fishermen with sleds and dogs go over it daily for a distance of eight or ten miles, and report that they find no soft spots, and that they will be able to continue their trips for two or three weeks longer. Set down the opening of navigation, at the earliest, for the middle of May. Last year, the first vessel started at noon on April 22d from Buffalo.

Advices from Lake Superior ports say that the indications for a busy season are becoming more favorable every day. The coal stocks received last year are almost gone, and more coal will be wanted this season than ever before. This, of course, will attract a large amount of tonnage to Marquette, Houghton, Duluth, Port Arthur, and other ports. By the by, there is a report in circulation that an English syndicate intends sending the cattle raised on its Dakota farms to Duluth to be shipped to New York *via* the lakes to Buffalo, thence by rail.

Change in the weather—very warm and pleasant. Believe spring came to town this morning to stay.

Boston. April 15.

[From our Special Correspondent.]

The market for anthracite coal is not forced. The companies have no large accumulations of domestic coal as yet. The market improves slowly. As a

rule, prices are 15 cents off circular and fair, strong, and steady. Some grades of Stove coal are held at $4 at New York, but $3.85 is the prevailing rate. Lykens Valley coal is firmly held at circular price of $5.40 for Stove at Philadelphia, and at $5.75 at New York. Usually there has been 50 cents difference between the New York and Philadelphia f. o. b. prices for Lykens Valley coal; but this year, it is only 35 cents. The difference on white ash coal is 25 cents. The Philadelphia & Reading Company is firmer than some of the other companies on domestic sizes. It is still short of coal. Quotations in New York and Philadelphia are given in their places. The pocket dealers have issued new price-lists as follows: Hard White Ash: Broken, $4.40; Egg, $4.40; Stove, $5.15; Nut, $4.65; Pea, $3.50. Free-burning White Ash: Broken, $4.20; Egg, $4.25; Stove, $5.15; Nut, $4.65; Pea, $3.35. Lykens Valley coal has been advanced 15 cents on Egg and 20 cents on Stove, the pocket prices being $6.40 and $6.65, respectively. White ash coal, both hard and free-burning, on the other hand, is reduced by pocket dealers 10 cents on Stove, 35 cents on Chestnut, 35@40 cents on Pea, and 65@70 cents on Egg and Broken, respectively, as compared with last season.

There is a small movement in gas-coal. The market is unsettled and the disposition of the companies is apparently to avoid making prices. The operators have a strike on their hands, and are not hurrying up trade. In the cases where the strikers have been successful an advance of 15 cents a ton for mining has been obtained. Still we hear the low f.o.b. prices of $3.15 @$3.25 at Baltimore and Philadelphia respectively, and it is whispered that $4.25 is named as a Boston delivered price. This would make f.o.b. prices only nominal.

There is not much doing in bituminous coal. Single cargoes are selling at $3.55@$3.65 delivered, or $2.25 @$2.35 f.o.b. at Baltimore and Philadelphia, respectively.

There is a downward tendency to freights. We quote:

New York, $1; Philadelphia, $1.15@$1.20; Baltimore, $1.25; Newport News, $1.25; Richmond, $1.30@$1.35.

There is a light retail movement at steady figures. We quote:

White ash, furnace and egg	$5.25@$5.75
" " stove and nut	5.50@ 6.00
Shamokin, egg	6 00@ 6.25
" stove	6.25@ 6.50
Lorberry, egg and stove	6.50@ 7.00
Franklin, egg and stove	7.50
Lehigh, furnace, egg, and stove	5.50@ 6.00
" nut	5.75@ 6.50

Real estate developments have caused a number of changes in Boston's retail coal trade lately. Three years since, the extensive coal wharf property, located corner of Mount Washington avenue and Federal street, was put in excellent condition by its owners, the Hemenway heirs, and was at that time leased to four retailers. Those leases have recently expired, and have now been renewed at an average advance of $1000. The four dealers are L. G. Burnham, Batchelder Brothers, Dean & Co., and J. E. Piper & Co. Piper & Co. decided to give up their wharf, and A. D. Calef, successor to Moses French, will occupy it, while Piper & Co. continue business at their Atlantic avenue stand.

It may also be mentioned that the large wharf property owned by the heirs of the late F. B. Hayes, and occupied by the Franklin Coal Company for the past fifteen years, is now to be improved and occupied by the Franklin Coal Company and H. G. Jordan & Co. Jordan removes from Albany street.

Baltimore. April 13.

[Special Correspondence.]

The following prices are established prices for coal, in cars, at depot of Northern Central Railroad from and after this date:

	Lump, Broken, Egg.	Stove.	Ches.	Pea.
Wilkes-Barre W. A., Susq. Coal Co.	$3.75	$4.60	$4.16	$2.95
Shamokin Free-burning W. A.	4.35	4.85	4.15	....
Lykens Valley Soft R. A.	5.90	6.15	5.90	....

All of the above coals, afloat alongside by boats, 15c. per ton *less* than in cars. These are to be the lowest prices for the season. Harder grades, Schuylkill or Mahanoy, fifteen cents higher than Wilkes-Barre prices. Prices for Lehigh Coal and Navigation Company coals, in its own boats, directly from Mauch Chunk, not announced yet. The figures for hard white ash egg and broken are 40c. below the spring prices for last year. Hard white ash stove is about the same, while Shamokin Egg is 25c. and Stove 45c. higher than last year at this time. Lykens Valley Egg is 35c. higher and Stove the same as last year. The free-burning coals, as will be seen, are maintained at firm prices, also Stove hard white ash, the decline being heavy on Lump, Steamer, Broken, and Egg, *hard white ash*, the coals that come into direct competition with bituminous. The harbor prices, for city consumption, for George's Creek and Cumberland R. M. are the same as in April, 1884, say $2.60 @ $2.70 f.o.b. Locust Point.

MINING STOCKS.

NEW YORK, Friday Evening, April 17.

The marked improvement in the mining market last week was too good to continue. The week under review, however, shows many favorable features. Dealings have been active and prices firm. The transactions have amounted to 74,845 shares, showing a decrease of 27,174 shares, as compared with those of the preceding week.

Business in the Bodie group has been quiet. The financial statement of the Standard Consolidated, from February 15th to March 25th, shows receipts—including $22,368.74, cash on hand by last statement — $56,792.31, and total disbursements $18,569.37, leaving a balance of $38,222.94. Bodie Consolidated's statement shows cash on hand, March 31st, $84,063.68. The transactions in the stock of the former company amounted to 700 shares, at from 95@$1.05, closing at 95c. In the latter, the sales were only 550 shares, ranging from $1.50@$1.60. Consolidated Pacific ruled steady at from 45@56c., with sales of 2200 shares. A sale of 5 shares of North Standard is reported at 49c. Bulwer Consolidated has been lower at from 25@37c., closing at 26c., with sales of 1900 shares. Plymouth Consolidated remains unchanged at from $16.25 @$16.63; 1160 shares changed hands. The reports from this mine continue to show satisfactory results, and the usual monthly dividend will no doubt be declared shortly.

The only stock of the Comstocks that has shown activity is Sutro Tunnel; but the small boom of last week has collapsed, and the dealings this week only amounted to 43,500 shares, showing a decrease of 48,900 shares, as compared with the preceding week. The price has also a downward tendency; it opened at 21c. and closed at 16c. Hale & Norcross has been lower, declining to $9, with sales of only 100 shares. In San Francisco, it has gone as low as $7. Telegraphic advices this morning show, however, a slight increase, the price ruling at $8⅝. No new development has been made, and the "great bonanza" is very slow in making its appearance. The president and some of the directors have been at the mine this week, and their visit may bring to life some wonderful discoveries. Among the other Nevada stocks, Eureka Consolidated is the most interesting feature; the price has been firm at from $4.75@$5, with sales of 850 shares.

The leading Colorado stocks show no change in prices and no increase of business. The largest dealings were in Amie Consolidated, and amounted to 2900 shares at 3c. Colorado Central, which has come to the front with a second dividend, has been active at from $1.10@$1.15, 1600 shares changing hands. Iron Silver remains unchanged at from $1 @$1.05, with sales of 1050 shares. Little Chief, 1300 shares at 22c. The dealings in the other stocks were small. The stockholders of the Bull-Domingo, which was sold to Mr. W. H. Lent some time ago, can join him in proportion to their interest, in order to work the mine. This offer remains open until the 25th inst.

The activity so long displayed in the stock of Horn-Silver Mining Company is steadily decreasing; the transactions this week amounted to only 3300 shares, the prices ranging from $2.20@$2.50. Ontario holds its own; 100 shares sold at $18.13. The future of Stormont is apparently brightening; a small strike is reported; sales were made of 400 shares at from 10@ 12c.

Some interest has been manifested in the shares of Alice; 900 shares sold at from $1.75@$1.85. A complete summary of the market will be found elsewhere.

The following stocks were sold at auction in this city April 16th; 200 shares Chrysolite, $141 for the lot; 200 shares Consolidated Batopilas, Preferred, $76 for the lot; 400 shares Consolidated Batopilas, Common, $80 for the lot; 4500 shares Iron Silver Mining Company, 95c. a share; 500 shares Alice Mining Company, $1.85 a share; $1895.83 receipt paid on account of Enterprise known as Batopilas Tunnel Enterprise, Mexico; $1136.24 paid October 21st, 1881, and $759.59 paid January 23d, 1882. No shares issued.

Messrs. Brown Brothers & Co.'s London and Liverpool representatives, Brown, Shipley & Co., have been appointed bankers of the United States State Department and fiscal agents of the Navy Department.

Coal Stocks.

The influences bearing on the general market were, first, a strong feeling that war between Russia and England could not be averted. As the news became more peaceful, manipulation still held and in some cases advanced prices for a while. Especially was the latter the case with the coal stocks. In the general coal trade, there has been but little to influence values one way or another.

Delaware & Hudson sold at $80 on Saturday, and advanced steadily until Wednesday, when it sold from $82½ up to $86¼. It has since been weaker, closing at $84 bid. Delaware, Lackawanna & Western has had a much larger business during the past week than in the previous one. It ranged between $105 and $108⅛, closing at $105½. Reading has been quiet, but a little stronger under hopes that the company would be able to prolong its painful existence a little further. This was owing to the progress made in extending the funding debt. It is now stated that only $700,000 is required to consent to the arrangement to make it successful. There have been considerable transactions in Jersey Central at strengthening prices for a while, but reacting during the past two days. The company is receiving about $20,000 a day from the Reading Company to meet April interest, but on May 1st there will be large additional amounts due for the same object. The other stocks are not worthy of notice so far as this week's dealings are concerned.

The Philadelphia *Press* of April 16th says:

"The Lehigh Valley Railroad has raised something more than a million dollars by the sale of some of its high class bonds which were in the treasury. The bonds were taken by Messrs. Drexel & Co., and it is said they have already been disposed of to parties and institutions in this city."

MEETINGS.

Evening Star Mining Company, No. 53 Broadway, New York City, May 4th, from two to three o'clock P.M.

Grand View Mining and Smelting Company, No. 29 Wall street, New York City, May 4th, at twelve o'clock M.

Hancock Petroleum Company, Rooms 48 and 53, No. 30 Broad street, New York City, May 7th, at two o'clock P.M.

Lord of Lorn Gold and Silver Mining Company, Room 6, No. 318 Pine street, San Francisco, Cal., May 11th, at one o'clock P.M. Special meeting for the purpose of voting on the question of increasing the capital stock, so that the whole amount or par value thereof shall be $10,800,000, divided into 108,000 shares of the par value of $100 each; and to repeal the by-laws, or any part thereof, and to amend the by-laws, or to adopt new by-laws therefor, as may be determined.

Morning Star Consolidated Mining Company, No. 53 Broadway, New York City, May 4th, from two to three o'clock P.M.

North Carolina Gold Mining and Reduction Company, No. 307 Walnut street, Philadelphia, Pa., May 6th, at three o'clock P.M.

St. Bernard Coal Company, Earlington, Ky., May 6th.

DIVIDENDS.

Adams Mining Company, of Colorado, has declared a dividend (No. 10) of fifteen cents a share, or $22,500, payable April 20th, at the Farmers' Loan and Trust Company, Nos. 20 and 22 William street, this city.

Colorado Central Mining Company, of Colorado, has declared a dividend (No. 2) of five cents a share, payable May 15th, at the Farmers' Loan and Trust Company, this city.

Diamond Coal Land Company announces a quarterly

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par value.	Assessments. Total levied to date.	Assessments. Date and amount per share of last.			Dividends. Total paid to date.	Dividends. Date and amount per share of last.		
1	Adams, s. L	Colo.	$1,500,000	150,000	$10	*				$157,500	Apr.	1885	.15
2	Alice, s. c	Mont	10.000,000	400,000	25	*				600,000	Mar.	1885	.12½
3	Amie Con., s. L	Colo.	5,000,000	500,000	10	*				320,000	Oct.	1883	.05
4	Atlantic, c	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	280,000	Feb.	1885	.50
5	Argenta, s	Nev.	10,000,000	100,000	100	285,000	Apl.	1884	.10	40,000	Feb.	1880	.20
6	Barbee & Walker, s.	Utah	1,000,000	100,000	10	*				60,000	Nov	1880	.10
7	Bassick, G. s	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1881	$1.00
8	Belle Isle, s	Nev..	10,000,000	100,000	100	120,000	Mar.	1884	.20	300,000	Dec.	1879	.25
9	Belcher, G. S	Nev..	10,400,000	104,000	100	2,186,135	Apl	1883	.25	15,397,000	Apl.	1876	1.00
10	Big B'nd Hydraulic, G	Dak..	1,000,000	200,000	5	*				132,000	Mar.	1885	.03
11	Black Bear, G	Cal..	3,000,000	30,000	100	22,500	Dec.	1884	.25	885,000	May	1883	.20
12	Bodie Con., G	Cal.	10,000,000	100,000	100	275,000	Dec.	1883	.50	1,695,000	Apl.	1885	.50
13	Bonanza Developm't	C & M	3,000,000	300,000	10					135,000	Oct.	1882	.15
14	Bonanza King, Cons.	Cal.	1,000,000	100,000	10	*				185,500	Feb.	1880	.10
15	Boston & Mont, G	Mont	2,000,000	200,000	10	*				310,000	Jan.	1883	.05
16	Breece, s	Colo.	5,000,000	200,000	25	*				2,000	Feb.	1880	.01
17	Bulwer, G	Cal	1,000,000	100,000	100	20,000	Jan.	1885	.20	175,000	Jan.	1884	.10
18	Calumet & Hecla, C	Mich	2,500,000	100,000	25					26,650,000	Dec.	1881	5.00
19	Carbonate Hill, s. L	Colo.	2,000,000	200,000	10	*				80,000	Apl.	1884	.05
20	Caribou Con., s	Colo.	1,000,000	100,000	10	*				50,000	Mch	1880	.10
21	Castle Creek, G	Idah.	100 000	100,000	1					51,000	Oct	1883	.03
22	Catalpa, s L	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
23	Central, C	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,710,000	Feb.	1884	2.00
24	Cholla	Nev..		112,000		7 4,000	Oct.	1884	.50				
25	Christy, s	Utah	6,000,000	60,000	100	24,000	Dec.	1883	.20	90,000	Jan.	1883	.10
26	Chrysolite, s. L	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
27	Colorado Central, s. L	Colo.								30,000	Apr	1885	.05
28	Con. Bobtail, G	Colo.	1,136,650	227,326	5	*				147,762	Mch	1880	.10
29	Con. Gold Mining, G.	Ga..	500,000	100,000	5	*				108,000	Nov	1883	.02
30	Contention, s	Ariz.	12,500,000	250,000	50					42,587,000	Dec.	1884	.25
31	Copper Queen, C	Ariz.	2,500,000	250,000	10	*				1,350,000	Dec.	1884	.50
32	Crescent, s. L. G	Utah	15,000,000	600,000	25	‡				150,000	Oct.	1883	.05
33	Crown Point. G. S	Nev..	10,000,000	100,000	100	2,675,000	Feb.	1882	.25	11,588,000	Jan.	1875	2.00
34	Deadwood-Terra, G	Dak..	5,000,000	200,000	25	*				$900,00	Jan.	1883	.10
35	Derbec B. Grav., G. s.	Cal..	10,000,000	100,000	100	90,000	Dec.	1881	.10	60,000	Oct.	1884	.10
36	Dunkin, s. L	Colo.	5,000,000	200,000	25	*				220,000	Sept	1884	05
37	Eureka Con., G. s. L.	Nev..	5,000,000	50,000	100	850,000	Jan.	1884	1.00	4,767,500	July	1882	.25
38	Evening Star, s. L	Colo.	500,000	30,000	10	*				1,400,000	Nov	1883	.50
39	Excelsior, G	Cal..	10,000,000	100,000	100	463,000	Sept	1884	50	875,000	Oct..	1880	.25
40	Father de Smet, G.	Dak..	10,000,000	100 000	100	200,000	Nov	1884	1.00	930,000	Apr.	1885	.20
41	Franklin, C	Mich	1,000,000	40,000	25	220,000	Jun	1871		440,000	Jan.	1884	2.00
42	Freeland, s	Colo.	5,000,000	200,000	25	*				50,000	May	1880	.25
43	Fresno Enterprise, G	Cal..	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
44	Gem, s	Colo.	125,000	125,000	1					23,750	May	1883	.02
45	Glen, s	Colo.	100,000	100,000	1					7 000	May	1883	.01
46	Gould & Curry, G. s.	Nev..	10,800,000	108,000	100	3,813,800	Oct..	1884	.50	3,826,000	Oct	1879	10.00
47	Grand Central, s	Ariz.	1,000,000	100,000	10					625,000	Dec.	1882	.25
48	Grand Prize, s	Nev..	10,000,000	100,000	100	530,000	Nov	1884	.30	495,000	Mar.	1884	.25
49	Granite, s	Colo.	125,000	125,000	1					6,250	May	1883	.01
50	Granite Mountain, s.	Mont	10,000,000	400,000	25					60,000	pl.	1885	.15
51	Green Mountain, G	Cal..	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
52	Hale & Norcross, G. S	Nev..	11,200,000	112,000	100	4,538,000	Mar.	1885	.50	1,598,000	Apl	1871	5.00
53	Hall-Anderson, G	N. S.	150,000	150,000	1					7,000	Jan.	1882	.05
54	Hecla Con., s	Mont	1,500,000	30,000	50					732,500	Apl.	18-5	50
55	Hel'a Mg & Red, G. s. L	Mont	3,000,000	600,000	5	*				72,000	Jan.	1885	.06
56	Henriett, L	Colo.		270,000						27,000	Feb.	1883	.10
57	Holyoke, G	Idah.	200,000	200,000	1					52,000	Nov	1883	.02
58	Homestake, G	Dak..	12,500,000	125,000	100	200,000	July	1878	1.00	2,718,750	Apr.	1885	.25
59	Hope, s	Mont	400,000	8,000	50	*				171,635	Oct..	1884	1.50
60	Horn-Silver, s. L	Utah	10,000,000	400,000	25	*				4,000,000	Nov	1884	.50
61	Idaho, G	Cal..	310,000	3,100	100					3,621,800	Dec.	1884	7.50
62	Independence, s	Nev..	10,000,000	100,000	100	300,000	Jan.	1885	.15	225,000	Sept	1879	.25
63	Indian Queen, s	Nev..	250,000	125,000	2					368,750	July	1882	03
64	Inyo, G	Cal..	500,000	100,000	5	*				45,000	Apl.	1884	.05
65	Iron-Silver, s. L	Colo.	10,000,000	500,000	20	*				1,300,000	Jan..	1884	20
66	Jackson, G. s	Nev.	5,000,000	50,000	100	10,000	Nov.	1880	.20	15,000	Dec.	1884	.10
67	Jocusitta, s	Mex.	10,000,000	100,000	100					1,200,000	Feb.	1885	.50
68	Kentuck	Nev..	3,000,000	30,000	100	342,000	Nov	1881	.30	1,288,000	July	1884	.10
69	La Plata, s. L	Colo.	2,000,000	200,000	10	*				610,000	Sept	1882	.30
70	Leadville, s. L	Colo.	4,000,000	400,000	10	*				350,000	Sept	1884	.05
71	Lexington, G. S	Mont								520,000	July	1884	
72	Little Chief, s. L	Colo.	10,000,000	200,000	50	*				780,000	Mch	1885	.10
73	Little Pittsburg, s. L	Colo.	20,000,000	200,000	100	*				1,050,000	Mch	1880	.50
74	Marguerite, G	Cal..	500,000	25,000	20					18.750	Oct..	1882	.25
75	Martin White, s	Nev..	10,000,000	100,000	100	1,100,000	Jan	1885	.25	90,000	July	1879	.30
76	Minas Nuevas, s	Mex.	300,000	100,000	3	*				20,000	July	1883	.10
77	Morning Star, s. L	Colo.	1,000,000	100,000	10					525,000	July	1884	25
78	Moulton, s. C	Mont	2,000,000	400,000	5	*				140,000	Apl.	1885	.07½
79	Mount Pleasant, G	Cal.	150,000	150,000	1	*				105.000	Mar.	1884	.10
80	Mt. Diablo, s	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	50,000	Nov.	1883	.25
81	Napa, Q	Cal..	700,000	100,000	7					290,000	Jan.	1883	.10
82	Navajo, G. S	Nev..	10,000,000	100,000	100	235,000	Mch	1882	20	325,000	Feb.	1885	.25
83	New York Hill, G	Cal..	5,000,000	50,000	100	55,000	Mch	1878	.20	215,000	Aug.	1882	.10
84	New York & Colo., G.	Colo.	1,250,000	50,000	25					25,000	July	1879	.10
85	Northern Belle, s	Nev..	5,0 0,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	.50
86	North Belle Isle, s	Nev..	10,000,000	100,000	100	105,000	Jan.	1884	.10	37,000	Aug.	1881	.15
87	Ontario, s. L	Utah	15,000,000	150,000	100					6,975,000	Mar.	1885	.50
88	Ophir, G. S	Nev..	10,000,000	100,000	100	3,902,800	Feb.	1885	50	1,595,000	July	1882	1.00
89	Original, s. C	Mont	1,500,000	60,000	25	*				114.000	Oct..	1884	.05
90	Osceola, C	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	972,500	Sept	1884	25
91	Oxford, G	N. S.	125,000	125,000	1	*				36,000	Apl.	18-4	.05
92	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	47,000	Mar.	1882	.47	50,000	Oct..	1-84	.10
93	Pleasant Valley, G. S.	Cal..	10,000,000	100,000	100	40,000	Mar.	1884	.10	30,000	Dec.	1882	.05
94	Plymouth Con., G	Cal..	5,000,000	100,000	50	*				1,100 000	Mar.	1885	.50
95	Prussian, s. L	Colo	1,500,000	150,000	10					132,000	Jan	1883	.10
96	Quicksilver, pref., Q	Cal..	4,300,000	43,000	100					696,900	Feb.	1884	.30
97	" com., Q	Cal..	5,700,000	57,000	100					151,000	July	1882	.40
98	Quincy, C	Mich	1,000,000	40,000	25	200,000	Dec.	1862		4,190,000	Feb.	1885	2.50
99	Richmond, s. L	Nev..	1,350,000	54,000	25	*				4,110,587	Aug.	1884	1.25
100	Rising Sun, s	Dak..	750,000	150,000	5	*				52,000	May	1881	.07½
101	Robinson Bar, G	Idah.	100,000	100,000	1	*				9,000	Dec	1882	.03
102	Robinson Con., s. L.	Colo.	10,000,000	200,000	50					575,000	Nov	1881	.50
103	Robert E. Lee, s. L	Colo.	250,000,000	500,000	500					100,000	Dec.	1882	10
104	Rooks, G	Vt.	500,000	50,000	10					46,000	Jan	1885	.30
105	San Francisco, C	Cal..	5,000,000	50,000	100	45,000	Sept	1880	.50	20,000	Feb.	1883	.05
106	Savage, s	Nev..	11,200,000	112,000	100	5,932,000	Feb.	1885	.50	4,480,000	July	1869	3.00
107	Security L. Mg, Mfg.	Colo.	1,000,000	100,000	10	*				50,000	July	1884	
108	Shoshone, G	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
109	Sierra Buttes, G	Cal..	225,000	22,500	10					1,450,983	Oct..	1883	.25
110	Sierra Bella, s	N. M.	1,000,000	200,000	5					30,000	May	1884	.15
111	Sierra Grande, s	N. M.	2,000,000	400,000	5					860,000	Sept	1884	.25
112	Sierra Nevada, G. S.	Nev..	10,000,000	100,000	100	5,847,698	Feb.	1885	.25	102,000	Jan.	1871	1.00
113	Silver Cord, G. S. L.	Colo.	4,500,000	450000	10					225,000	Nov	1883	.25
114	Silver King, s	Ariz.	1,000,000	100,000	100					1,400,000	Feb.	1885	.25
115	Small Hopes, Cons., s.	Colo.	5,000,000	250,000	20	*				937,500	Mar.	1885	.15
116	Smuggler, s. L	Colo.	600,000	6 ,000	10					66,700	Aug.	1883	.25
117	Socorro, C	N. M.	250,000	2,500	100					4,000	Mch	1882	.00½
118	South Yuba, G	Cal..	2,000,000	40,000	50	*				150,000	Oct.	1881	.75
119	Spring Valley, G	Cal..	200,000	200,000	1	*				50,0 0	Jan.	1881	.25
120	Standard, G. S	Cal..	10 000,000	100,0 0	100					4,400,000	Mar.	1884	.25
121	Stormont, s	Utah	200,000	200,000	1	*				155,000	Nov.	1884	.05
122	St. Joseph, L	Mo..	1,000,000	100,000	10	*				430,000	Dec.	1884	.20
123	Syndicate, G	Cal..	10,000,000	100,000	100		July	1882	.15	6 ,000	Nov.	1884	.10
124	Tip Top, s	Ariz.	10,000,000	100,0 0	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
125	Tombstone, G. S	Ariz	12,500,000	500,000	25					1,250,000	Apl.	1882	.10
126	True Fissure, G. S. L.	Utah	1,500,000	150,000	10	*				75,000	Jun.	1883	.15
127	United Gregory, G	Colo.	300,000	300,000	1					42,000	Apl..	1883	.25
128	United Verde, C	Ariz.	97,500					Mar.	1884	.20			
129	Valencia, M	N. H.	150,000	1,500	10	*				18,750	Apl.	1885	2.50
130	Vizina, s	Ariz.	5,000,000	200,000	25	*				140,000	Apl.	1882	.10
131	Yellow Jacket, G. S.	Nev..	12,000,000	120,000	100	5,358,000	Feb.	1882	1.00	2,184,000	Aug.	1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Value.	Assessments. Total levied to date.	Assessments. Date and amount per share of last		
1	Albion, s. L	Nev..	$15,000,000	150,000	$100	$577,000	July	1883	.50
2	Allonez, c	Mich	2,000,000	80,000	25	240,000	Feb.	1884	.50
3	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	415,000	Jan.	1885	.50
4	Alta, s	Nev..	10,080,000	100,800	100	1,901,000	Lec.	1884	25
5	American Flag, s	Colo.	1,250,000	125,000	10	300,000	Jun.	1877	.25
6	Barcelona, G	Nev..	5,000,000	200,000	25	*			
7	Battle Creek, G	Dak.	5,000,000	200,000	25				
8	Bear Creek	Cal.	300,000	300,000	1				
9	Beauce	N'a S							
10	Bechtel Con., G	Cal..	10,000,000	100,000	100	173,500	Jan.	1883	.10
11	Belvidere	Cal..		60,000		92,000	Feb.	1882	.25
12	Best & Belcher, G. S	Nev.	10,080,000	100,800	100	1,546,990	Nov	1884	.50
13	Big Pittsburg, s. L.	Colo.	20,000,000	200,000	100	*			
14	Black Jack, G	Cal..	250,000	100,000	2½				
15	Bonanza Chief	Mon	1,000,000	1,000,000	1	*			
16	Bondholder	Colo.	500,000	200,000	2½				
17	Boston Con., G	Cal..	10,000,000	100,000	100	170,000	Nov	1883	.25
18	Boulder Con	Colo.							
19	Bradshaw, s	Ariz.	2,250,000	225,000	10				
20	Buckeye	Colo.	2,000,000	400,000	5	*			
21	" preferred	Colo.							
22	Bull Domingo, s. L	Colo.	10,000,000	200,000	50	*			
23	Bullion, G. S	Nev..	10,000,000	100,000	100	4,545,000	May	1884	.25
24	Bye and Bye	Ariz.	1,000,000	100,000	10	*			
25	Calaveras, G	Cal..	500,000	500,000	1	*			
26	Cal. W'r & M. Co., G	Cal..							
27	Caledonia, S. H., G	Dak	10,000,000	100,000	100	490,000	Jan.	1885	.15
28	Castle Creek, G	Idah.							
29	Catskill, s	Nev..	1,500,000	300,000	5				
30	Central Arizona, s.	Ariz.	10,000,000	100,000	100				
31	Chapparal	Cal..							
32	Cherokee, G	Cal..	1,500,000	150,000	10				
33	Chollar, s	Nev..	11,200,000	112,000	100	704,000	Oct	1884	.50
34	Climax	Colo.							
35	Con. Cal & Va., G. S.	Nev..	21,600,000	216,000	100	108,000	Jan.	1885	.20
36	Con. Imperial, G. S.	Nev..	50,000,000	500,000	100	1,000,000	Sept	1884	10
37	Con. Pacific, G	Cal..	6,000,000	60,000	100	150,000	Mar	1883	.15
38	Crescent, s. L	Colo.	3,000,000	300,000	10	*			
39	Crowell, G	N. C	500,000	500,000	1				
40	Dahlonega, G	Ga..	250,0 0	250,000	1	*			
41	Daguanelles, G	Cal..	1,000,000	100,000	10				
42	Decatur	Colo							
43	Dunderberg, s	Colo	1,500,000	150,000	10	*			
44	Durango, G	Colo.	500,000	500,000	1	*			
45	Elko Con., S	Nev..					Mar	1884	.15
46	Empire, s	Utah	10,000,000	100,000	100				
47	Enterprise	Colo.							
48	Exchequer	Nev.	10,000,000	100,000	100	820,000	Jan.	1885	.20
49	Globe Copper	Ariz.							
50	Gold Placer, G	Colo.	5,000,000	200,000	25	*			
51	Goodshaw, G	Cal..	10.000,000	10 ,000	100	204.314	Jan.	1884	.10
52	Granville, G	N. C	300,000	300,000	1	*			
53	Harlem M. & M. Co, G.	Cal..	1,000,000	200,000	5				
54	Head Center, s	Ariz.	5,000,000	200,000	25	170,000	Jan.	1884	.10
55	Hortense, s	Colo.	2,000,000	200,000	10				
56	Julia Cons., G. S	Nev..	11,000,000	110,000	100	1,416,000	Jan.	1884	.10
57	Lacrosse, G	Colo.	1,000,000	100,000	10	*			
58	Leviathan, s	Nev..	10,000,000	100,000	100	380,000	Sept	1882	25
59	Lucerne, s	Colo.	5,000,000	500,000	10	*			
60	Mariposa pref., G	Cal..	5,000,000	50,000	100	1,687,500	Dec.	1881	
61	" common, G	Cal..	10,000,000	100,000	100	1,975,000	Feb.	1883	.25
62	May Belle, G	Cal..	10,000,000	100,000	100	84,000	Dec.	1881	.20
63	Mayflower, s	Nev..	1,000,000	100,000	100	60,000	Mar	1884	.15
64	Mexican, G. S	Nev.	10,000,000	100,800	100	2,490,160	Feb.	1885	.25
65	Michoacan Synd	Mex.							
66	Miner Boy, G. S. L	Colo.	5,000,000	500,000	10	*			
67	Miller	Nev	5,000,000	200,000	25				
68	Mono, G	Cal..	5,000,000	50,000	100	535,000	July	1884	.50
69	Moose Silver, s	Colo.	3,000,000	300,000	10	*			
70	Nevada Syndicate								
71	New Pittsburg, s. L	Colo	2,000,000	200,000	10	*			
72	North Standard, G	Cal..	10,000,000	100,000	100	20.000	Nov		
73	Noonday	Cal..	600,000	60,000	10	208,000	Dec.	1881	.10
74	Old Dominion, C	Ariz.	3,000,000	300,000	10				
75	Oriental	Nev.	2,000,000	200,000	10				
76	Oriental & Miller, s.	Nev..	10,000,000	400,000	25				
77	Overman, G. S	Nev..	11,520,000	115,200	100	3,682,000	Dec	1883	.25
78	Potosi	Nev..	10,200,000	112,000	100	776,000	Jan.	1885	25
79	Quartz Creek				100				
80	Rappahannock, G	Va		250,000		*			
81	Red Elephant, s	Colo	500,000	500,000	1	*			
82	Retort M. & M. Co	Colo.			10				
83	San Pedro, G. S. L	N.M.		400,000					
84	Silver Cliff, s	Colo.	5,000,000	200,000	25	*			
85	Sonora Con	Mex.							
86	South Bodie, G	Cal..		100,000		100,000	Mar	1882	.15
87	South Bulwer, G	Cal..	10,0 0,000	100,000	100	195,000	May	1881	.25
88	South Hite	Cal..	10,000,000	100,000	100		Jan.	1883	.05
89	South Pacific	Cal..			5				
90	State Line, No. 1, s.	Nev..	200,000	200,000	1				
91	" No. 2, s	Nev..	5,000,000	200,000	25				
92	" No. 3, s	Nev..	5,000,000	200,000	25				
93	" No. 4, s	Nev..	5,000,000	200,000	25				
94	" Nos. 1 and 4, s.	Nev..			25				
95	" Nos. 2 and 3, s.	Nev..							
96	Sullivan, G. S. L	Me...	500,000	100,000	5	125,000	Dec.	1882	.25
97	Sutro Tunnel	Nev..		2,000,000		*			
98	Taylor-Plumas, G	Cal..	1,000,000	200,000	5	*			
99	Tioga Cons., G	Cal..	10,000,000	100,000	100	325,000	Oct.	1882	.10
100	Tuscarora, s	Nev.	10,000,000	100,000	1 0	110,000	Oct.	1881	.15
101	Unadilla, s	Colo.	50,000,000	500,000	100	*			
102	Union Con., G S	Nev..	10,000,000	100,000	100	1,985,000	Feb.	1885	.25
103	Utah, s	Nev..	2,000,000	20,000	100	1,810,000	Dec.	1884	.50
104	Vandewater	Nev.,	20,000,000	200,000	100	*			
105	Washington	Ariz.	2,000,000	200,000	10				
106	Whalen Copper	Nev..	2,500,000	100,000	25				

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to December 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood has previously paid $275,600 in eleven dividends, and the Terra $75,000. ‖ Total number of shares, 500,000; 50,000 shares have never been issued, and are still held by the company.

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE.												SALES.
	April 11.		April 13.		April 14.		April 15.		April 16.		April 17.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mon.	1.85	.....	1.80	1.75	1.85	.....	1.80	.....	.....	.....	1.80	.....	900
Amie Con., Co.	.....	.....	.03	.....	.03	.....	.03	.....	.....	.....	.03	.....	2,900
Argenta	.....	.....	.....	.....	.17	.....	.....	.....	.....	.....	.....	.....	100
Bassick, Co.	.....	.....	.....	.....	.....	.....	2.85	.....	2.85	.....	.....	.....	300
Belle Isle, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bodie Cons., Ca.	.....	.....	1.50	.....	1.55	.....	.....	.....	1.60	.....	.....	.....	550
Breece, Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bulwer, Ca.	.....	.....	.37	.36	.35	.....	.31	.....	.28	.25	.26	.....	1,900
California, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cal. & Hecla, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Castle Creek	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chollar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chrysolite, Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado Central	.....	.....	.....	.....	.....	.....	1.15	1.10	.....	.....	1.15	.....	1,600
Cons. Cal. & Va., Ne.	1.00	.98	1.05	1.00	1.05	1.00	.90	.....	1.00	.80	.92	.....	5,590
Crown Point	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dunkin, Co.	.....	.....	.....	.....	.....	.....	.....	.....	.15	.....	.....	.....	100
Eureka Cons., Ne.	.....	.....	4.75	.....	.....	.....	5.00	4.90	5.00	.....	5.00	.....	850
Father de Smet, Dk.	5.75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50
Findley, Ga.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gold Stripe, Ca.	.04	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,100
Gould & Curry, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand Prize, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Green Mountain, Ca.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hale & Norcross, Ne.	.....	.....	.....	.....	.....	.....	9.00	.....	.....	.....	.....	.....	100
Hall-Anderson, N. S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Homestake, Dk.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horn-Silver, Ut.	2.35	.....	2.50	2.40	2.45	.....	2.45	2.40	.....	.....	2.40	2.20	3,300
Independence, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron Silver, Co.	.....	.....	1.00	.....	.....	.....	1.05	.....	.....	.....	.....	.....	1,050
Leadville C., Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Little Chief, Co.	.....	.....	.....	.....	.....	.....	.22	.....	.....	.....	.....	.....	1,300
Little Pittsburg, Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Martin White, Ne.	.....	.....	.....	.....	.70	.....	.....	.....	.....	.....	.....	.....	100
Navajo, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	1.05	.....	.....	.....	100
Northern Belle	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Belle Isle, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ontario, Ut.	18.13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Ophir	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plymouth	16.50	16.38	16.38	16.25	16.38	16.25	16.50	16.38	16.50	16.38	16.63	16.50	1,160
Potosi	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quicksilver Pref., Ca.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" Com., Ca.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Robinson Cons., Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Savage, Ne.	.....	.....	6.50	6.00	5.00	.....	5.50	.....	.....	.....	.....	.....	115
Sierra Nevada, Ne.	.....	.....	1.20	.....	.....	.....	1.15	.....	.....	.....	.....	.....	400
Silver King, Ar.	.....	.....	2.50	.....	.....	.....	2.45	.....	.....	.....	.....	.....	200
Spring Valley, Ca.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard, Ca.	.....	.....	1.05	1.00	1.00	.98	.95	.....	.....	.....	.....	.....	700
Stormont, Ut.	.12	.....	.....	.....	.....	.....	.10	.....	.....	.....	.....	.....	400
Tip-Top, Ar.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yellow Jacket	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE.												SALES.
	April 11.		April 13.		April 14.		April 15.		April 16.		April 17.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Albion	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alta	.....	.....	.60	.....	.60	.....	.60	.....	.60	.55	.....	.....	1,600
Barcelona, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bechtel Con., s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belvidere	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Best & B'cher, g. s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.35	.....	25
Big Pittsburg, s. l.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bradshaw, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bull-Domingo, s. l.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cal., B. H., g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.50	.....	.....	200
Central Ari'na, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Climax, Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Imperial	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. Pacific	.51	.50	.53	.45	.56	.51	.52	.51	.53	.52	.53	.....	2,200
Dahlonega	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Decatur	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Durango, g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eastern Oregon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Goodshaw, g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Harlem M. & M. Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hortense, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kossuth	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lacrosse, g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa Pref., g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" Com., g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexican, g. s.	1.25	.....	1.25	.....	1.25	.....	.....	.....	.....	.....	.....	.....	250
Mono	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Pittsburg	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Noonday	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Standard, g.	.....	.....	.....	.....	.....	.....	.....	.....	.49	.....	.....	.....	5
N. Horn-Silv'r, s. l.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ori'nt'l & Miller, s.	.11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Rappahannock, g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Red Elephant, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ruby, of Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver Cliff, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sonora Con.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Bodie, g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Bulwer, g.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Hite	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Pacific	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
State Line, 1 & 4, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" Nos. 2 & 3, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sutro Tunnel	.21	.19	.20	.18	.19	.18	.18	.16	.17	.14	.17	.16	43,500
Taylor Plumas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tioga	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unadilla, s.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union Cons., g. s.	1.15	.....	.....	.....	1.10	.....	.....	.....	.....	.....	.....	.....	600
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Dividend shares sold, 26,365. Non-dividend shares sold, 48,480.

dividend of one dollar a share, payable on demand, at Philadelphia, Pa.

Father de Smet Consolidated Gold Mining Company, of Dakota, has declared a dividend (No. 44) of twenty cents a share, payable April 30th, at the office of Laidlaw & Co., 14 Wall street, New York City.

Homestake Gold Mining Company, of Dakota, has declared a dividend (No. 80) of twenty-five cents a share, or $31,250, payable at the office of Lounsbery & Co., 15 Broad street, New York City, April 25th. Total dividends to date, $2,718,750.

SAN FRANCISCO MINING STOCK QUOTATIONS.

Daily Range of Prices for the Week.

NAME OF COMPANY.	CLOSING QUOTATIONS.					
	April 10.	April 11.	April 13.	April 14.	April 15.	April 16.
Albion	.....	.....	.....	.....	.....	.....
Alpha	.....	.....	.....	.....	.....	.....
Alta	.45	.45	.45	.45	.40	.....
Argenta	.....	.....	.....	.....	.....	.....
Bechtel	.....	.....	.....	.....	.....	.....
Belcher	1.37½	1.37½	1.50	1.37½	1.12½	.....
Belle Isle	.....	.....	.....	.....	.....	.....
Best & Belcher	2.50	2.50	2.62½	2.37½	2.12½	.....
Bodie	1.50	1.37½	1.37½	1.37½	1.50	.....
Bullion	.....	.....	.....	.....	.....	.....
Bulwer	.....	.....	.....	.....	.....	.....
Chollar	3.75	3.75	4.00	4.12½	3.50	.....
Con. Pacific	.....	.....	.....	.....	.....	.....
Con. Cal & Va.	1.00	1.12½	1.00	.90	.85	.....
Crown Point	1.62½	1.62½	1.37½	1.25	1.12½	.....
Day	.....	.....	.....	.....	.....	.....
Elko Cons	.....	.....	.....	.....	.....	.....
Eureka Cons	4.25	.....	5.00	.....	.....	.....
Exchequer	.....	.....	.....	.....	.....	.....
Gould & Curry	2.50	2.50	2.25	2.25	2.00	.....
Grand Prize	.....	.....	.....	.....	.....	.....
Hale & Norcross	10.88	10.00	9.75	9.00	7.87½	.....
Independence	.....	.....	.....	.....	.....	.....
Martin White	.....	.....	.50	.40	.45	.....
Mexican	1.25	1.25	1.25	1.25	1.00	.....
Mono	.....	.....	.....	.....	.....	.....
Mount Diablo	4.00	.....	4.00	.....	4.00	.....
Navajo	1.12½	1.12½	1.00	.....	1.00	.....
Northern Belle	.....	.....	.....	.....	.....	.....
North Belle Isle	.....	.....	.....	.....	.....	.....
Ophir	1.25	1.25	1.25	1.12½	1.00	.....
Overman	.....	.....	.....	.....	.....	.....
Potosi	1.75	1.75	1.87½	1.75	1.50	.....
Savage	5.87½	5.50	5.12½	4.87½	4.25	.....
Scorpion	.....	.....	.....	.....	.....	.....
Sierra Nevada	1.50	1.37½	1.37½	1.25	1.37½	.....
Silver King	.....	.....	.....	.....	.....	.....
Tip-Top	.....	.....	.....	.....	.....	.....
Union Cons	1.25	1.25	1.12½	1.12½	1.00	.....
Utah	1.75	1.75	1.37½	1.62½	1.25	.....
Wales Cons	.....	.....	.....	.....	.....	.....
Yellow Jacket	2.25	2.12½	2.12½	2.25	1.87½	.....
.....	.....	.....	.....	.....	.....	.....

The following mining companies had cash on hand on April 1st as per statement in offices :

Potosi	$18,340.89	Sierra Nevada	$21,238.53
Chollar	9,897.90	Utah	1,374.56
Hale & Norcross	43,920.80	Occidental	2,639.88
Savage	31,984.28	Alpha Con.	9,660.92
Gould & Curry	15,634.90	Exchequer	2,448.37
Best & Belcher	12,610.16	Alta	6,708.00
Con. California & Virginia	16,412.68	Benton	4,428.00
Bullion (unsold)	40,766.17	Bodie Con.	84,063.68
Mexican	17,117.78	Bodie Con. (bullion)	4,278.00
Ophir	3,961 82	Mono	14,043.83
Union	1,845.02		

MINES IN DEBT.

Lady Washington	$3,991.00	Albion Con.	$265,000.00

PIPE LINE CERTIFICATES.

Messrs. Watson & Gibson, petroleum brokers, No. 49 Broadway, report as follows on the oil market for the week :

Fluctuations have been within very narrow limits, 79 being the highest price, and 77⅞ the lowest. The Thorn Creek District production has been increasing during this time, running up to 12,850 barrels. To-day, it was down to 11,800. The Ackerly and Murphy wells have caused this increased output. The Stow well, on the Noel farm to the east of Thorn Creek's present development, is on top of the sand, and is awaited with interest. Exports are larger than at any time this year. The war news, which stimulated speculation in grain and stocks, failed to help oil.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange :

		Opening.	Highest.	Lowest.	Closing.	Sales.
April	11	$0.77⅞	$0.79	$0.77⅞	$0.78⅜	3,291,000
	13	.78⅜	.79⅛	.78½	.78¾	4,489,000
	14	.79	.79⅛	.78⅛	.78¾	4,142,000
	15	.78⅜	.79	.78¼	.78⅜	2,281,000
	16	.78⅜	.79	.77⅞	.78⅛	2,575,000
	17	.78	.78⅛	.77½	.77¾	2,054,000
Total sales						18,832,000

Boston Copper and Silver Stocks.

[From our Special Correspondent.]

BOSTON, April 16.

The market continues to rule extremely dull, although prices are firm, and the tendency is toward higher figures for dividend-paying stocks. Calumet & Hecla is steady at $165, at which price all the sales were made, and it is still offered at that, with $160 as the best bid to-day. There was more inquiry for Quincy this week, and orders to buy at best price could not be filled except at an advanced rate over recent prices. The last sale (April 1st) was at $28, and but little stock was offered under $30, at which price about 50 shares were sold, closing firm to-day at $29½ bid, $30 asked. There is also a good demand for Franklin, 600 shares of which sold at $6 early in the week, with subsequent sales at $6½, and it is quite firmly held at this price. Osceola advanced from $8½ to $9¼ on sales of about 100 shares only. The rest of the list is unchanged and neglected.

In silver stocks, Bonanza Development has shown some activity, with sales of about 1200 shares at $1, which was also bid for it. Bowman Silver, dull and heavy ; a block of 3000 shares was offered at 14c. without takers. Small sales at 15@16c. An assessment is anticipated in the near future, which in part accounts for the decline. Catalpa, dull at 18@20c. Dunkin, 18@20c. Consolidated Pacific, 50c. bid, 60c. asked.

In miscellaneous stocks, there is no activity. American Electric and Illuminating Company, offered at $1. Water-Meters, firm at 23@25c. for both New England and Standard.

3 P. M.—The market this afternoon was steady without much change in prices. Calumet & Hecla, $160 @$165. Quincy, $29¾ bid, $30 asked. Franklin, $6 bid, $6½ asked.

BULLION MARKET.

NEW YORK, Friday Evening, April 17.

DATE.	London. Pence.	N. Y. Cents.	DATE.	London. Pence.	N. Y. Cts.
April 11	49 1-16@49⅛	107	April 15	49¼	107¼
13	49¼@⅜	107⅛	16	49 5-16	107⅜
14	49¼	107¼	17		107⅜

Foreign Bank Statements.—The governors of the Bank of England, at their regular weekly meeting, made no change in the bank's minimum rate of discount, and it remains at 3½ per cent. During the week, the bank lost £278,000 bullion ; but the proportion of its reserve to its liabilities was raised from 47 to 48, against 47¾ per cent at this date last year. The weekly statement of the Bank of France shows gains of 29,986,000 francs gold, and 1,126,000 francs silver.

COAL STOCKS.

NAME OF COMPANY.	Par value of shares.	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted so much per share.												Sales from April 11th to April 16th inclusive.
		April 11.		April 13.		April 14.		April 15.		April 16.		April 17.		
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Am. Coal Co.	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cameron Coal	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. C & I.	10	10⅞	10¾	10¾	.....	11	.....	.....	.....	.....	.....	10⅞	.....	500
Ches. & O. RR.	100	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	100
Consol. Coal.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cumb. C. & I.*	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & H. C.	100	81⅝	80	83	81½	83¼	81⅞	86¼	82¾	85¼	84½	85	83¾	15,585
D., L. & W. RR.	50	106½	105	107	106⅝	107⅜	106¼	108⅛	106⅞	107⅛	106¾	106⅝	105	205,603
Elk Lick Coal Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lehigh C. & N.*	50	41¼	.....	41¼	41¼	41¾	41¼	42	41¾	42⅛	42	.....	.....	1606
Lehigh Valley RR.*	50	59½	59	59½	.....	59⅝	.....	60¼	59⅝	60⅞	60½	.....	.....	1262
L. & W. C. & I. Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland Coal.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montauk Coal.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morris & Essex.	50	.....	.....	122	.....	.....	.....	.....	.....	122¼	122	.....	.....	190
New Central Coal.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J. C. RR.	100	35⅞	35⅛	36	35⅝	36¾	35¾	38¼	36⅞	37⅛	36	36	35	56,534
N. Y. & S. Coal.	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. Coal.	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. RR.*	50	54¼	.....	54⅝	54⅛	54¼	54	54⅜	54⅛	54⅜	54¼	.....	.....	2,453
Ph. & R. RR.†	50	15¾	15⅛	15¾	.....	16⅛	.....	16¼	16	16	.....	16	.....	6,325
Spring Mountain.	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Westmoreland Coal*	50	.....	.....	.....	.....	60	.....	60	.....	.....	.....	.....	.....	22

* Actual price of stock, all other quotations being a percentage of the par. Total sales, 290,180.
† Of the sales of this stock, 4195 shares were in Philadelphia and 2130 in New York.

BULLION PRODUCTION FOR 1885—SPECIAL OFFICIAL REPORTS.

MINES.	States.	Month of March.	Year from Jan. 1st, 1885.
		$	$
Adams, S. L.	Colo.	.....	70,600
Alice, G. S.	Mont.	.....	156,456
Belmont	Nev.	——	10,003
Boston & Montana, G	Mont.	.....	66,399
Christy, S	Utah	.....	35,941
Chrysolite, S	Colo.	.....	9,234
Colorado Central, S.	Colo.	.....	36,300
Consolidated Bobtail, G.	Colo.	.....	10,869
Deadwood-Terra, G	Dak.	25,357	105,740
Derbec Blue Gravel, G. S.	Cal.	14,237	43,417
Essex, G. S.	N. S.	698	3,933
Eureka Consolidated, S. L.	Nev.	——	27,395
Father de Smet, G.	Dak.	13,386	78,841
Grand Prize, S.	Nev.	.....	25,150
Granite Mountain, S.	Mont.	.....	139,600
Hall Anderson, G.	N. S.	3,163	3,163
Head Center & Tranquillity	Ariz.	41,948	85,396
Hecla Consolidated, G. S. L. C.	Mont.	*65,835	181,888
Helena, G. S. L. C.	Mont.	.....	176,500
Homestake, G.	Dak.	94,612	291,669
Hoover Hill, G. S.	N. C.	.....	10,773
Hope, S.	Mont.	.....	23,500
Iron Silver, S. L.	Colo.	.....	129,083
Kentuck, S.	Nev.	†431	789
Lexington, G. S.	Mont.	69,270	181,571
Moulton, S. G.	Mont.	.....	121,915
Mount Diablo, S.	Nev.	.....	26,924
Navajo, S.	Nev.	——	82,894
New Pittsburg, S.	Colo.	——	9,594
North Belle Isle, S.	Nev.	——	2,118
Ontario, S.	Utah	225,682	592,054
Oxford, G.	N. S.	——	987
Plymouth Consolidated, G.	Cal.	80,135	246,832
Rooks, G.	Vt.	.....	14,201
South Yuba, G.	Cal.	768	1,168
Standard Consolidated, G.	Cal.	‡28,705	87,104
Stormont, S.	Utah	13,355	39,634
Tombstone, G. S. L.	Ariz.	*72,547	179,653
		.....	3,309,287

G., gold; S., silver; L., lead; C., copper. Silver valued by the different companies from $1@$1.29·29 per ounce: gold, $20.67. *Not including value of lead and copper. †Royalty. ‡Net. —— No shipments during month mentioned.

STATISTICS OF COAL PRODUCTION.

Production Anthracite Coal for week ended April 11th, and year from January 1st:

TONS OF 2240 LBS.	1885.		1884.	
	Week.	Year.	Week.	Year.
P. & Read. RR. Co.	257,677	2,460,856	328,110	2,629,056
L. V. RR. Co.	124,152	1,190,474	153,655	1,492,430
D., L. & W. RR. Co.	82,751	1,048,566	106,419	1,204,220
D. & H. Canal Co.	67,377	767,991	104,447	890,554
Penna. RR.:				
N. & West Br. RR.	17,075	288,151	19,709	229,372
S. H. & W. R. RR.	3,637	35,896	4,836	54,384
P. & N. Y. RR.	* -	73,802	13,002	126,476
Penna. Coal Co.	27,556	252,745	39,178	281,519
Total	580,225	6,151,421	769,356	6,908,011
Increase	.....	.....	.....	.....
Decrease	.....	†	.....	.....

* Reports not received.
† The exact figures of decrease can not be given, on account of delayed reports.

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1880	5,942,209	1882	6,710,348
1881	6,721,875	1883	7,226,941

Production Bituminous Coal for week ended April 11th and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1885. Week.	1885. Year.	1884. Week.	1884. Year.
*Cumberland Region, Md.	62,280	591,386	63,851	568,604
Barclay Region, Pa.				
Barclay RR.	†	68,242	5,801	98,454
Broad Top Region, Pa.				
Huntington & Broad Top RR.	3,956	46,189	4,689	56,034
East Broad Top	.....	.....	.....	.....
Clearfield Region, Pa.				
Snow Shoe	3,267	59,316	5,232	72,346
Karthaus (Keating)	2,020	43,380	.....	.....
Tyrone & Clearfield	65,638	871,844	61,944	788,301
Alleghany Region, Pa.				
Gallitzin & Mountain	9,498	139,640	3,939	117,159
Total	146,659	1,819,997	145,456	1,700,898

WESTERN SHIPMENTS.‡

Pittsburg Region, Pa.				
West Penn RR.	7,788	76,792	4,716	92,650
SouthwestPenn. RR.	2,202	30,457	3,485	44,233
Pennsylvania RR.	429	51,310	7,217	78,321
Westmoreland Region, Pa.				
Pennsylvania RR.	4,283	248,748	5,330	330,139
Monongahela Region, Pa.				
Pennsylvania RR.	3,406	52,939	3,503	47,417
Total	18,108	460,246	24,251	592,760
Grand total	164,767	2,280,243	169,707	2,293,658
Decrease	.....	13,415	.....	.....

* Tons of 2240 lbs.
† Reports not received.
‡ Considerable gas-coal shipped East, of which no division is made in report.

Production of Coke on line of Pennsylvania RR. for week ended April 11th, and year from January 1st:

Tons of 2000 pounds.

	1885. Week.	1885. Year.	1884. Week.	1884. Year.
Alleghany Region.	3,196	51,873	2,629	37,969
West Penn. RR.	1,292	7,537	77	23,711
Southwest Penn. RR	35,424	518,837	44,477	616,769
Penn. & W. Region	3,409	69,782	3,557	57,571
Monongahela	2,116	23,059	1,241	21,415
Pittsburg Reg.	.....	.....	.....	120
Snow Shoe	237	4,253	730	7,654
Total	45,674	675,341	52,711	765,209
Decrease	.....	89,868	.....	.....

FREIGHTS.

Season freight rates, car lots from Chicago to New York, 20 cents per 100 pounds on lead, bullion, ore, matte, etc., value not exceeding $100 per net ton.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to April 4th:

To	From Philadelphia	From Baltimore.	From New York shipping ports.
Alexandria	.....	.....	.....
Annapolis	.....	.....	.....
Albany	.....	.....	.....
Baltimore	.....	.....	.....
Bangor	.....	.....	.90
Bath, Me.	.....	.....	.80
Beverly	.....	.....	.80
Boston, Mass.	.....	.....	.80
Bristol	.....	.....	.....
Bridgeport, Conn.	.....	.....	.55
Brooklyn	.....	.....	.....
Buffalo, N. Y.	.....	.....	.....
Cambridge, Mass.	.....	.....	.80‡
Cambridgeport	.....	.....	.80‡
Charleston, S. C.	.....	.....	.....
Charlestown	.....	.....	.80
Chelsea	.....	.....	.80
City Point	.....	.....	.....
Com. Pt., Mass.	.....	.....	.80
E. Boston	.....	.....	.80
East Cambridge	.....	.....	.80‡
S. Gr'nwich, R. I.	.....	.....	.80
Fall River	.....	.....	.75
Galveston	.....	.....	.....
Gardiner, Me	.....	.....	.....
Georgetown, D. C.	.....	.....	.....
Gloucester	.....	.....	.....
Halifax	.....	.....	.....
Hartford	.....	.....	.....
Hackensack	.....	.....	.....
Hudson	.....	.....	.....
Lynn	.....	.....	.....
Marblehead	.....	.....	.....
Medford	.....	.....	.....
Millville, N. J.	.....	.....	.....
Milton	.....	.....	.....
Newark, N. J.	.....	.....	.....
New Bedford	.....	.....	.80
Newburyport	.....	.....	.....
New Haven	.....	.....	.55
New London	.....	.....	.70
New Orleans	.....	.....	.....
New-Berne	.....	.....	.....
Newport	.....	.....	.75
New York	.....	.....	.....
Norfolk, Va.	.....	.....	.....
Norwich	.....	.....	.75
Norwalk, Conn.	.....	.....	.55
Pawtucket	.....	.....	.....
Philadelphia	.....	.....	.....
Portland, Me.	.....	.....	.....
Portsmouth, Va.	.....	.....	.....
Portsmouth, N. H.	.....	.....	1.00
Providence	.....	.....	.75
Quincy Point	.....	.....	.85
Richmond, Va.	.....	.....	.....
Rockland, Me.	.....	.....	.....
Rockport	.....	.....	.....
Roxbury, Mass.	.....	.....	.....
Saco	.....	.....	.....
Sag Harbor	.....	.....	.....
Salem, Mass.	.....	.....	.80
Saugus	.....	.....	.....
Savannah	.....	.....	.....
Somerset	.....	.....	.....
Staten Island	.....	.....	.....
Trenton	.....	.....	.....
Troy	.....	.....	.....
Wareham	.....	.....	.....
Washington	.....	.....	.....
Weymouth	.....	.....	.....
Williamsbg, N. Y.	.....	.....	.....
Wilmington, Del.	.....	.....	.....
Wilmington, N. C.	.....	.....	.....
St. Thomas, W. I.	.....	.....	.....
Key West, Fla.	.....	.....	.....

* And discharging. † And discharging and towing. ‡ 3c. Per bridge extra. § Alongside. ‖ And towing up and down. ¶ And towing. ** Below bridge.

Market firm. Vessels in demand.

BALTIMORE, April 9, 1885. GEORGE W. JONES & Co.

WANTED.

List of Mica Mines and Properties in U. S. Also names and addresses principal wholesale dealers in Mica. Address O., P.O. Box 1833, New York.